

A Work Project, presented as part of the requirements for the Award of a Master's degree in Impact Entrepreneurship and Innovation from the Nova School of Business and Economics.

FootOwl- Where data meets the pitch.

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Abstract

One common thing for every European club that has experienced recent international success is the use of data in their decision-making process. Likewise, all the most reputable companies worldwide, from tech to healthcare, have their decisions supported by complex data systems. This project aims to provide a solution that can introduce data to many Portuguese clubs, enabling a measurable competitive advantage through an innovative business model. The concept was validated with the help of 16 football industry experts and resulted in a prototype that allows FootOwl to start operating in the market and creating value for clients.

Keywords

Entrepreneurship, Technological Innovation, Football Analytics, Scouting, Football, Soccer

Acknowledgments

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Introduction- A brief history of football analytics

This section aims to provide a view on the evolution of data analytics in football, a process that started years before the World War II and is now evolving to general adoption in the most renowned football leagues in the world.

Charles Reep (1904-2002), an awarded Wing Commander who served the English Royal Air Force during World War II is considered as the pioneer of football analytics (XFB 2022). He started this process by taking notes at halftime from the games he watched, namely actions, positions, and passing sequences to build a record of play. Reep complemented that work with more self-developed theories and metrics, totalizing 80 hours of work for a single match. With that material, he took conclusions and built lists of recommendations based on statistical inference, which would turn him into a reference and raise the interest of many clubs (Arastey 2019). Reep eventually collaborated with 23 clubs in the years that follow.

A more general use of simple statistics came in 1996 with the creation of Opta Consulting, company that counted with a numerous staff to watch and register metrics from all the Premier League games, that were spread across decision-makers in the form of an Excel sheet. Although most of the data is still collected manually, nowadays Opta and its competitors collect thousands of data points and not just primitive statistics, like at that time (XFB 2022).

The modern era for football statistics started in the 2010s, with data being broadly used among top clubs, namely in scouting and recruiting, where most of a club's budget is allocated. Cases like Monchi's Sevilla (Training Ground Guru 2019) and Liverpool's talent identification capabilities (Dougramaji 2023) are considered case studies of analytics as an enabler of great financial results. In recent years, the trend has been the creation of metrics that allow the attribution of different values for actions from the same categories, such as passes, shoots and movements (Dar 2021). Specialists from different backgrounds have joined this market and use

social media to share knowledge, contributing to spreading new concepts faster and enhancing the contribution of analytics even further.

Literature Review- Data in Football

With its modern version being invented in Britain during the 19th century, football is, by far, the most popular sport in the world. With over 250 million players across 200 countries and 3.5 billion followers, it surpasses sports like cricket and basketball in popularity (Nadar 2023). Businesswise, European football is a market valued at €29.5 billion (2021/22), reaching all-time highs after recovering from the pandemic recession (Appendix- Graph 1) (Deloitte 2023). And in a growing market like that, clubs, especially in the big-5 leagues (England, Spain, Germany, Italy and France), more than doubled their investment in players over the last 10 years (Poli et al. 2022), from €2.74 billion in 2013 to €6.19 billion in 2022. According to the same source, one third of the value invested in players was addressed to clubs outside big-5, which translates to a wide range of beneficiaries. But how do clubs invest their money in players? According to the study *Using data analytics to capture the strategic and financial decision-making of Europe's top football club* (Toma et al. 2023), the majority of clubs prefer to strategically spend their budget on a few carefully selected players that are most likely to be successful, instead of diversifying their investment over less valued professionals (Appendix- Graph 2). Thus, it is key to wisely spend the money on key players and prevent cases of overestimation of a player's value. It is on the task of determining the correct value to pay for a player that data shows to be a valuable resource. *Beyond crowd judgments: Data-driven estimation of market value in association football* (Müller et al. 2017) concluded that “a data-driven approach to estimating market value can overcome several of crowdsourcing's practical limitations while producing comparatively accurate estimates.”. However, the use of data provides many other benefits to clubs. Ulrich Lichtenthaler, at *Mixing data analytics with intuition: Liverpool Football Club scores with integrated intelligence* (Lichtenthaler 2020)

shows that data analytics and AI can provide a sustainable competitive advantage by showing concrete evidence from Liverpool FC case study.

Table 1- Findings on the reviewed sources

Authors	Title	Main Findings	Limitations
Deloitte 2023	Annual Review of Football Finance 2023	Detailed financial analysis and reflects on regulatory changes. Industry recovery after the pandemic.	Lacks specific data on the Portuguese market
Toma et al. 2023	Using data analytics to capture the strategic and financial decision-making of Europe's top football club	Most successful teams tend to spend more but on specific targets	-
Müller et al. 2017	Beyond crowd judgments: Data-driven estimation of market value in association football	Highlights the accuracy of data-driven estimates of market value	-
Lichtenthaler 2020	Mixing data analytics with intuition: Liverpool Football Club scores with integrated intelligence	Data analysis and AI have contributed to Liverpool FC success after the pandemic	Difficult to compare with the Portuguese reality

Why FootOwl

FootOwl was created to provide football decision-makers with easy-to-interpret data-centered tools that will improve their decision-making process. We believe that data is a valuable tool and not a deterministic factor in making a decision; thus, our services are thought of as support that will decrease time-to-action and increase their accuracy (Müller et al. 2017).

FootOwl’s offering can be divided into two categories: The first is the elaboration of scouting reports based on specific markets or player profiles defined by the client, which will serve as a fast market study to test the attractiveness of a new football championship. The scouting

department will work with a small list of potential players, instead of searching completely from scratch. FootOwl will deliver this by accessing powerful football databases containing information about dozens of leagues and hundreds of thousands of players and, based on algorithms, building reports that will serve as a prefilter for our clients. Additional services, like finding a team with similar playing styles to which their players would adapt better, are also included. The second is the advisory and support for the creation of a data analysis structure inside the clubs. That comprises the development of internal tools to treat, visualize, and interpret data, the advice on which software/hardware to acquire, and education courses for current staff in order to extract the most valuable insights from the available tools. In this document, FootOwl's business model, new to the industry and validated by industry experts, will also be introduced. It is centered on the client's success and also potentiates the sales process.

Bill Aulet's Framework- 24 Steps to a Successful Startup

The following sections of this thesis will follow a structure very similar of Bill Aulet's framework, (Figure 1) author and Professor at MIT. It was chosen due to its systematic approach to entrepreneurship (Figure 2 in the Appendix) and applicability to innovation-based ventures. According to his own website, Bill Aulet describes his framework as "extremely valuable for hundreds of thousands of entrepreneurs globally at all experience levels. Rather than invent new concepts, Disciplined Entrepreneurship assembles the tools that have already established track records of success in practice from many different sources. It then integrates them together in an easy to access and prescriptive road map." (Aulet 2023) The sections' names will

have a specific color code (Table 2), corresponding to a different domain of the venture creation process and are ordered in the same sequence as his.



Figure 1- Bill Aulet's 24 Steps framework (Aulet 2013)

Table 2- Color Coding

Color	Domain
Blue	Understand the customer
Red	The product's applicability to the customer's needs
Grey	Product Acquisition
Green	Business Model and financial assumptions
Orange	Product design and prototyping
Purple	Business Scalability

Segmentation and Narrowing

After brainstorming a wide array of possible business opportunities, Figure 3 illustrates all the main users that presumably fit FootOwl’s services in the Portuguese market.

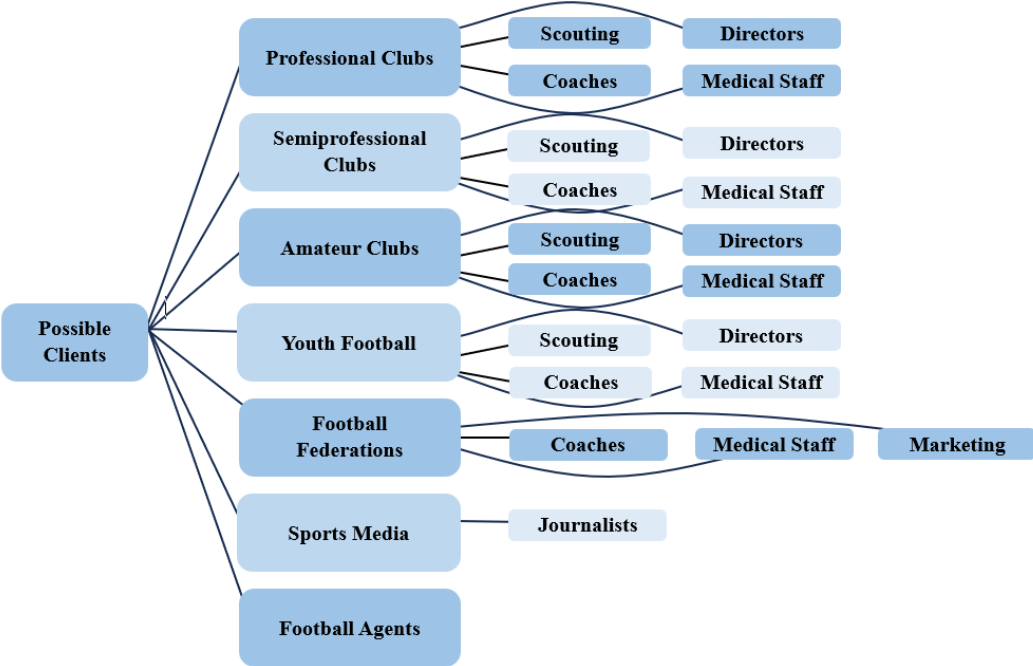


Figure 3- Market Segmentation

That comprises football clubs, federations, sports media and football agents. Following Bill Aulet’s framework (Aulet, Disciplined Entrepreneurship, 2013), the next step to follow is to list the top opportunities from Figure 3. The first criteria used to narrow the initial list was the budget each end-user might have to acquire the service, with the more well-funded the most suitable. That eliminates semiprofessional, amateur, youth football clubs and subsequent end users from the equation. Sports media journalists, due to the broad availability of free data providers for the required information, might not be the most interested clients to address either. Football Federations, due to being unique entities in each country, don’t represent a scalable market, which is necessary to increase market share at the very beginning. Football clubs are

also a perfect client in terms of brand recognition, as entities that gather thousands of people around a common goal, and so contributing to it could be very favorable for FootOwl. That is something that, for instance, football agents cannot guarantee, although they also have a client selection process very similar to that of several clubs, especially with young players.

Primary Market Research

The goal with this primary market research was to, based on the narrowing rationale performed before, select a possible beachhead market where FooOwl can establish itself and start earning market share. The selected approach was performing semi-structured interviews with possible end-users and other agents directly related to sport entities to acknowledge the current market situation, financially and in terms of data usage, their opinion on the importance of data, future plans for data tool implementation, and their opinion on FootOwl's services and features. A semi-structured interview, according to the *Research Methods for Business Students* book (Saunders, Lewis, and Thornhill 2007), is the most adequate method when open-ended or complex questions need to be asked, which is the case. From dozens of contact approaches, via personal network, relatives' network, and cold email, 16 participants were interviewed, either via video or phone call. A full list of participants with the corresponding post-interview script is provided in the Appendix.

Select a Beachhead Market

The information collected with Miguel Farinha, Partner at EY and author of *Anuário do Futebol Profissional Português 2021-22* (EY, 2022), an overview of Liga 1 and Liga 2 financial health, allowed to confirm that in the short term only clubs from Liga 1 would have the capacity to fund a data department or acquire reports on a regular basis. By 2028, with TV rights centralization, which, based on the Spanish case study, is expected to increase this category earnings by 50%, clubs from Liga 1 would increase their financial condition based on a revenue

source that presently accounts for 20% of total revenues. Liga 2, due to low attractiveness as a product, is not expected to take a considerable advantage from the deal .

Within the scope of Liga 1 clubs (18 clubs), there are very different realities in terms of data adoption and subsequent integration in decision-making. Clubs like SC Braga, SL Benfica and Sporting CP are considered examples in the implementation of these solutions (Pedro Santos, Carlos Campos, and António José Pereira mentioned one of them as role models (Appendix, Notes From Semi Structured Interviews)), with the others either trying to incorporate them or still reluctant on their advantages to the organization. The latest, as clubs that want to be competitive without having the financial resources of top clubs, might consider the idea of hiring FootOwl's service as a way of getting an experience of data advantages for the club without having the compromise of internalizing and assuming the inherent fixed costs. That information was extracted from the interviews conducted with Rui Tomé, João Rosa, Carlos Campos and Luís (Appendix, Notes From Semi Structured Interviews), for instance, revealing savings in time and resources after hearing about this service's features, allowing the club to deliver the same output in less time and with fewer human resources. This group of 12 to 15 clubs fills the three criteria defined by Aulet to be defined as a market with efficiencies of scale, as the product to be sold is common to all customers, with similar sales cycles, and Footowl benefits from "word of mouth" in a small but very competitive market where all clubs seek to gain incremental advantages from tools and services that proved to be efficient.

Since FootOwl plans to provide two different services, the reports and the consulting, it was decided to select the most suitable one to provide and test first based on the interviewees' feedback. Considering that the creation of a data analysis department or the acquisition of software requires incurring fixed costs (human resources and annual licenses) and taking into consideration both the financial limitations and the transition phase in terms of data adoption, focusing on the scouting reports seems to be the best decision at this stage. This was a question

asked in the final stage of every interview, and the answers were consensual. The consulting service will be implemented at a later stage after trust in data and in our services is built with the reports. Taking a look again at Figure 1 in Segmentation and Narrowing section, coaches, medical staff, directors, and scouting are listed as a subgroup of professional clubs. Coaches and medical staff would be excluded because of the low applicability of the scouting reports. Regarding player agents, the participation of Luís Vilar, a very reputable football opinion-maker that collaborates in the Portuguese media, (Appendix, Notes From Semi Structured Interviews), provided important information regarding the agents' client selection process that, by being similar to what clubs implement for young players, could position them as an interesting market to address afterwards. The competitions where these players are usually targeted are available in the database, so agents are to be considered in the medium run, after the beachhead market is addressed.

End User Profile

In order to develop a successful product, it is strictly necessary to understand the customer that FootOwl is serving. For this reason, this chapter will include a general profiling of our End Users, crucial to calculating the Total Addressable Market for the previously defined Beachhead Market. From interviewing a part of them and researching others, the following characteristics can be identified:

- Gender: Male
- Age Range: 40-55 years of age
- Income Range: Mid-High Income
- Geographic Location: Lisbon, Porto and Braga districts
- Professional Background: Played football since youth, reaching a professional or semi-professional level afterwards. Got interested either in training or in more executive roles

after career ended. Started collaborating with clubs after and eventually reached a coordination role as a technical, sporting, or scouting director.

Total Addressable Market (TAM) for Main Customers

For these calculations, consulting services will be excluded as assumptions for them are highly dependent on the scope of the project, the data tool developed, and the existing capacity of the club to manage data. Thus, the below rationale is only regarding the scouting reports/studies. According to the TransferMarket database, a website containing a record of all the transfers from dozens of competitions, clubs from Liga 1 hired, in total, more than 100 players from 40 different competitions across 3 continents just in the summer market of 2023, which represents hours of video analysis and numerous business trips to perform live observations. If the leagues that were observed with no deals resulting from that observation or other players that were observed without being signed are also accounted for, the volume of time and resources needed becomes even more evident. Data from the interviews with people connected to the recruitment process, either from scouting or technical directors, such as Pedro Santos from Rio Ave, João Rosa from Sporting CP, or Carlos Campos from FC Famalicão (Appendix, Notes From Semi Structured Interviews), pointed to the time-saving possibilities that this solution allows. They could explore the same markets in less time or explore more markets at the same time, enriching the observation base. That is the case of clubs like Rio Ave and Gil Vicente, for instance, from which the representatives confirmed to have the support of a scout for the national market and another for all the international competitions (Appendix, Notes From Semi Structured Interviews) which for obvious reasons cannot be very exhaustive in terms of markets analyzed. And looking at the transfer history during the 2023 summer window, it can be observed that Portuguese clubs tend to use that international scout, especially in Spain and Brazil, from which almost every club in Liga 1 hires players.

FootOwl, in that way, can work as a tool to either explore these markets faster or enlarge the markets explored by this scout. With that in mind, the following rationale can be developed to calculate the Total Addressable Market:

- Consider only 14 Liga 1 clubs - exclude SL Benfica, FC Porto, and SC Braga—because of their capacity to internalize this service by hiring more scout staff or for already having these tools internalized;
- Consider that every one of the remaining clubs explores the Portuguese first two divisions, the Spanish first two football tiers, and the Brazilian first four tiers;
- 40 more leagues are explored by 2 clubs each, according to a proxy of 2023 specified before in this section.

Performing the calculations, the Total Addressable Market for FootOwl main customers would be of 192 reports across 14 different clubs in a single season.

Buyer Persona

Based on the End User Profile defined before, it is now important to, similarly to marketing exercises, define a Buyer Persona to have a specific image of a customer to address, leaving no room for assumptions. Since the number of end users in the beachhead market is small and the service is homogeneous, only one Personna is to be defined. This Personna is real; however, an alias is adopted.

Table 3 - Buyer Persona

Name	“João Silva”
Age	45 years of age
Role	General Director at a Liga 1 club
Story	Played at a semi-professional level until his late 20s.

	<p>His passion for football motivated him to invest in education and pursue a career in an administrative role for a club, using the network that he developed during his career.</p> <p>Started as a Team Manager and his work ethic and results raised the interest of other clubs, which invited him to be the General Director, responsible for all the sporting strategy.</p>
Working life	<p>Promotes a strong connection between all the people that he coordinates, having a small regularly. He constantly calls people from his network to keep the bond and eventually discuss professional topics.</p>
Needs	<p>Optimize his club's results by hiring the best players possible based on skills and profile, and sell players at a good price as the club's business model dictates.</p>
Pains	<p>The resources are very scarce (Ernst & Young 2022), as is the time. During the transfer window, there are always unexpected deals that require his team to be effective in detecting a player to replace. There are dozens of markets to search for; however, the time constraints often lead him to call an agent to find him a player from his portfolio because his staff can't find an alternative in the typical markets. That is biased and leaves many options out of the decision-making process. The results can be expressed as a couple of player replacements that were not done accordingly, which may cost losses on squad quality and subsequent translation to results.</p>

Full Life Cycle Case

In this section, an exhaustive full life cycle case will be drawn from the point where the end user notices that something in its process should be done differently to the point where more services are acquired after possible positive feedback. Figure 4 shows how the loop from pre-acquisition to post-acquisition is supposed to work.

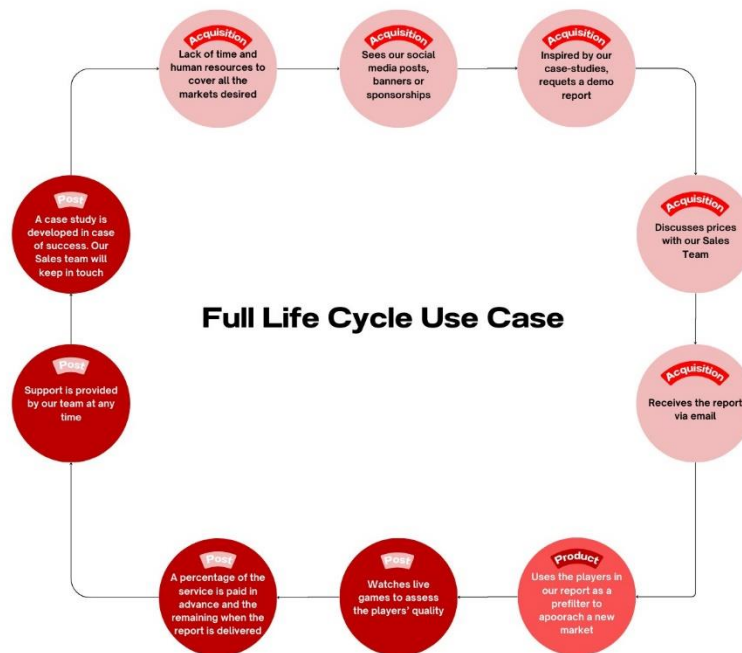


Figure 4- Full Life Cycle Use Case

High Level Product Specification

In Figure 5 in the Appendix, a visual representation of a report is built with a few explicative notes to show to clients and collaborators, in order to go through the prototyping stage faster. That figure only contains a high-level concept for the cover page, as the remaining include detailed statistical descriptions of the players initially mentioned.

The list of benefits of these reports is the following:

- Quick and statistically based approach to a new market. That allows clubs to assess the value of that market without putting too much resources and time into it and without guarantees of success.
- The club can tailor this approach to its specific needs by establishing a comprehensive set of criteria for player inclusion. This allows the club to guarantee that the profiles presented in the report align with its intended objectives.

- Similarity Score. The fit between the desired profile and the results in that market can be objectively measured.

Quantify the Value Proposition

After reviewing all the features of FootOwl's product, the next step is quantifying their impact on customers. This process benefits from the interviews' data, which consensually points to time-saving possibilities as the stronger field of the service described.

Priority of our Persona "João Silva"

"As is" State – At the moment, "João" and his team spend from a couple of weeks to a month to evaluate a player or explore market opportunities in a new country. If, during transfer windows, any unexpected sale happens or all the ongoing negotiations with targeted players fail, the club is dependent on players from partner agents or hurried evaluations.

"Possible State" – With FootOwl reports, "João" and his team can explore multiple markets in a matter of days. If an unexpected sale happens, "João" can request a report from FootOwl and, in a couple of days, solicit his team to evaluate specific profiles with a higher margin of matching what he intends, instead of having to search completely from scratch.

FootOwl's Next 10 Customers

To approach the next 10 customers, it was decided to use the initial network due to the problems faced when reaching potential participants and the suitability that most of them have to be potential customers. During the conversations, they answered questions regarding Market Analysis, Full Life Cycle Use Case and Quantified Value Proposition. The deliverables and the Proposition were also validated, with time-saving being the most prominent characteristic highlighted by customers. Of the 16 people interviewed, 14 were potential customers, of whom 9 showed a willingness to have a demo of the product. The option of a demo is a common

practice in the industry, even with more renowned software. That is the reason behind the decision to invite people for a demo and not for the acquisition of the service.

FootOwl's Core

FootOwl's core can be defined as the continuous effort to promote data driven decision-making. To deliver that, FootOwl makes use of advanced statistical algorithms that are not usually incorporated in this industry. This translates to a more personalized output that better matches the customer's requirements. The feature of finding similarities between the club's requests and the players available in the market or the recommendation of players based on specific profiles is only possible based on advanced statistic algorithms and FootOwl's effort to always incorporate this knowledge into this area. In the medium and long term, the goal is to contribute to the data revolution in clubs by advising on the creation and implementation of Business Intelligence tools.

Competitive Chart

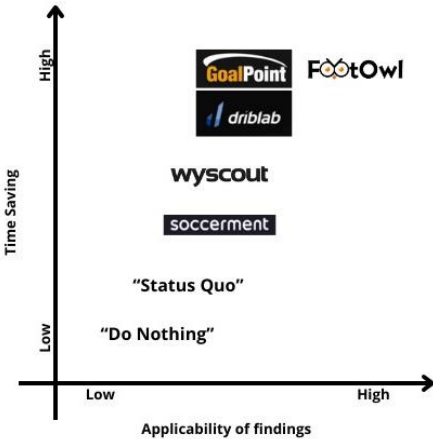


Figure 6- Competitive Chart

To draw the competitive chart that maps our competitors across a matrix, it was required to name these axis after the characteristics that our customers value the most. According to the

interview findings, the number-one priority of our personas was the applicability of the findings, represented in the X axis as the Time Saving to the Scouting process is the second. Before going into competitor comparison, it is important to explain the “Status Quo” and the “Do Nothing” plotted in the matrix. The first relates to the current processes that the generality of the interviewees adopt. They can be generalized as a small department with 2 to 4 people that use video observation and contact with agents to find players in the market. Their observation, due to time constraints, is far from exhaustive, and in the process, they spend time analyzing players that are far from the desired profile. However, that is better than the “Do Nothing” alternative, which relies solely on agents to suggest deals. Of the considered competitors, only GoalPoint and WyScout were mentioned by the participants, as the others were the result of autonomous searches. GoalPoint and Driblab, in this service of reports, have very similar propositions and services as Footowl’s and can be considered the most direct competitors in this stage; however, the core is what differentiates them. GoalPoint’s focus is on bringing football analytics to the general public and generating revenue through their social media, and GoalPoint Pro, indeed, is a side service where they help clubs and media with personalized content. Driblab is a Spanish consultancy company that also provides similar reports to FootOwl’s and even works with the client’s data. The main difference is that FootOwl also wants its clients to develop in-house capabilities and provides consultancy in that field. Soccerment and WyScout are not that closely comparable, as the first doesn’t focus its output on customization, and the second is mostly used as a video analysis platform that also serves as an API to provide raw data to organizations.

Making a Purchase Decision

As a B2B business, acknowledging the purchase decision process of FootOwl’s clients is key to optimizing the sales process. From what was described during the interviews, the clubs enquired do not have an extensive structure behind them, which is why the “Champion” and

the “End User” nomenclature from Bill Aulet’s framework get mixed. The “Champion”, “person who wants the customer to purchase the product” (Aulet, Disciplined Entrepreneurship, 2013), is in this case similar to the “End User”, “the person who will actually use the product” (Aulet, Disciplined Entrepreneurship, 2013), are the Scouting Department, comprising the Director and the Analysts. They are the ones identifying the problem, pushing for a solution, and, at the same time, using it. The “Primary Economic Buyer”, is “the primary decision maker, as everyone looks to this person to sign off on spending money to purchase your product.” (Aulet, Disciplined Entrepreneurship, 2013). Depending on the club size, that role can be played by the President himself or the Financial department, responsible for the budget.

Customer Acquisition Process

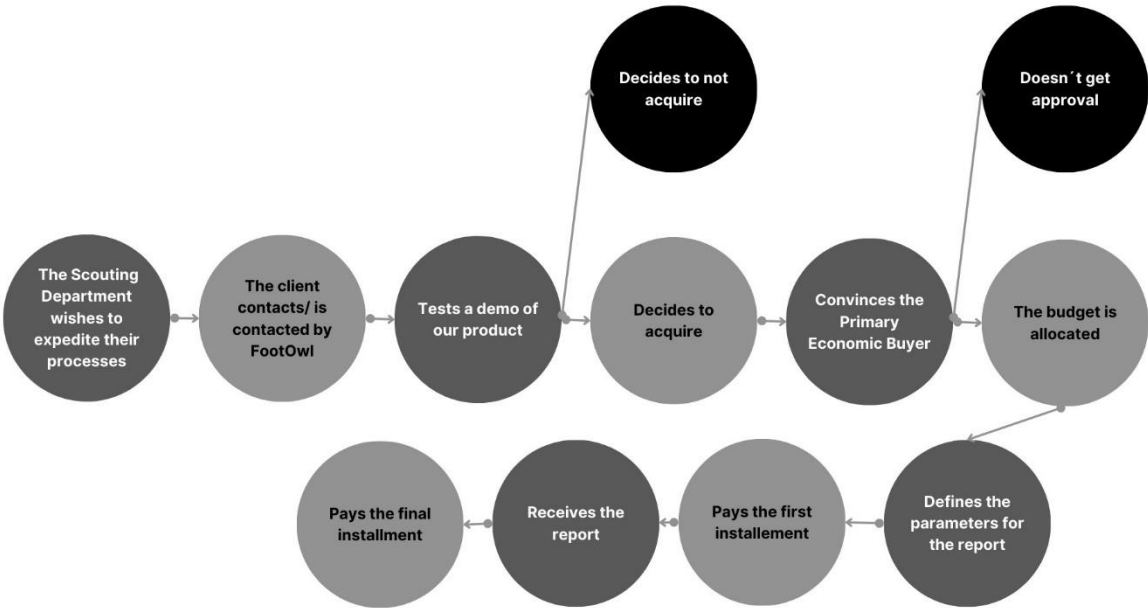


Figure 7- Customer Acquisition Process

The above graph represents a general process to acquire a customer, from need identification to the payment of the final installment. It is a continuation of the full life cycle use case that

incorporates the deciders identified in the previous section. From clubs that play in Liga 1, there is always a decision-maker, either from the board or from the Financial department, that has to approve the amount to allocate to the acquisition of this service. On clubs playing at a lower level, that question is dealt directly with the president; other clubs have a more structured organization. The timings for each step are not specified in the graph because they depend on the time of year. During the time when the transfer season is not open, the urgency of acquisition is lower, as the time the Scouting department has to work is longer. During the transfer window, especially when reaching the end when an unexpected sale happens and the club has no substitutes identified, the process might be expedited. Thus, this full process can last from a week to a month, depending on the timing.

TAM for Follow-on Markets

Before calculating the TAM (Total Addressable Market) it is necessary to make an important decision: whether to expand the reports to additional markets, by internationalizing the product, or, as the core definition states, to have a role in the way clubs will deal with the data revolution that traditional businesses have already felt. Based on the information collected from Estela Lucas and the assessment of the implementation of data tools by clubs, the decision for a follow-on market to explore will be the second. Estela, as Intelligence and Fan Engagement Director in the FPF, worked on many innovative projects on business intelligence. A part of them were successes, and a part weren't; however, as a non-lucrative organization, FPF understands its role in the development of the Portuguese and, therefore, decided to write reports about the findings from those projects and studies about the Portuguese clubs. From the studies, Estela specified, as a takeaway, that most clubs don't have any experience with business intelligence and are still registering data in archaic ways. That is why the strategy of introducing FootOwl to clubs with intuitive and insightful reports and then trying to implement incremental changes to the internal processes seems to be a viable path. Thus, the follow-on market would be made of the same 14

cubs with an expected project (with different scopes and timings) for each club. Additionally, FootOwl might start working with football agents, providing the same reports provided to football clubs, to help them identify potential clients to work with. After market research and due to Luis Vilar's insights, the market has around 10–20 medium to big football agencies that may hire our services to identify players from youth competitions, such as the Africa U20 Cup of Nations, the Toulon Tournament and youth leagues from Rio de Janeiro and São Paulo. That may account for around 50 to 70 reports a year, potentially.

Business Model

In FootOwl's concept, what could unarguably differentiate it from its competitors is the new concept for the business model, based on industry specific incentives and validated with industry players. To provide context on the market characteristics, the following reasoning is developed:

Excluding the four biggest clubs, Liga 1 clubs spent €16.6 million on player transfers (Summer 2023 transfer window), according to Transfermarket data, and hired a total of 113 players, of whom about 77% were on free transfers. Thus, the average fee for paid transfers was €640k, and there were 87 free transfers. FootOwl is also aware of the changes in the current processes, which are more focused on video and live match observation than data, so there might be resistance to our services. With that in mind, FootOwl will test the following business model:

- Fixed fees to be paid at the start and at the delivery of the report would be reduced to a minimum that wouldn't compromise the sustainability of FootOwl;
- If the club hires a player identified in our report, the club has to pay a fee:
 - Fixed, in the case of a free transfer;
 - Variable, in the case of a paid transfer.

In that way, the payment is proportionally linked to the value of our output to the client, creating a virtuous incentive. Validating this strategy required FootOwl to contact people who had previously collaborated on the interviews. António José, SC Braga technical director, approved that idea, saying that “it makes sense to charge a value for the report and then, in relation to the financial/sporting outcome, charge another fee.” João Rosa, Scout for the Sporting CP Women’s Team, also showed his approval for this business model in terms of finding profiles for the department to analyze further.

Pricing Framework

Considering FootOwl’s business model and the previously calculated Value Proposition, the pricing strategy will capture value in two different ways. Firstly, as these reports save Scouting Departments valuable time, the initial fixed fees will be linked to that saving. Assuming an average of one month to make a preliminary search of a new market using the traditional processes and the fact that FootOwl can shorten that time to a week while at the same time performing a more exhaustive search, we based our price on that. If a club has monthly costs with a full-time scout of €1.5k a month and FootOwl makes the same task four times faster, it can be assumed that the club would need three more employees to deliver the service in the same period, spending €4.5k more a month. Letting the client keep around 80% of the value created (Aulet, Disciplined Entrepreneurship, 2013), the fixed fees of the report would be around €1k (a percentage paid in advance and the other paid after the report is delivered, as described in Full Life Cycle Case). Regarding the second aspect, the fee charged if the club hires a player identified by FootOwl, and taking into consideration the limit of 3% imposed by FIFA for transfers above \$200k (O’Hanlon 2023), the charged fee would be 1.5%, as we replace the role of an agent that identifies players for a club. The other 1.5% is assumed to be for the player’s agent. In the case of free transfers and assuming the average transfer fee of €640k that was paid in summer 2023 for the bottom 14 clubs, our fee would be 1.5% of that value, totaling

€9.6k. Early testers would benefit from a 50% discount on the first two reports in exchange for their close collaboration and availability to build a case study around their situation.

Lifetime Value (LFV) of an Acquired Customer

Taking the previous assumptions with others that were required, Table 4 in the Appendix provides all the calculations required to estimate the Lifetime Value of a Customer over a period of 5 years. The only revenue sources included are the reports with the subsequent commissions in case a transfer of an identified player happens.

Sales Process to Acquire a Customer

As described in the Full Life Cycle Case, the sales are made through the Sales Team, which will either contact or be contacted by possible clients and will conduct all the sales processes. Over time, FootOwl’s plan is to increase the percentage of clients that contact us directly after engaging with a case study on our social media, instead of having someone from our Sales Team to contact them directly. That strategy allows FootOwl to lower the Cost of Customer Acquisition (COCA) over time. The table above shows the strategies implemented for different periods of time.

Table 5- Strategies for the Sales Process

	Short Term	Medium Term	Long Term
Sales Channel	100%-Direct Sales	70%-Direct Sales 30%- Social Media	70%-Direct Sales 30%- Social Media
How Long	Year 1	Years 2 and 3	Years 4 and 5
Key Milestones	<ol style="list-style-type: none"> 1. Brand Awareness 2. Concept Awareness 3. Data Transformation Awareness 4. Convert the first 5 clients 	<ol style="list-style-type: none"> 1. Achieve a client retention of 90% 2. Reach 10 clients 3. Start receiving transfer commissions 4. Develop case studies as a marketing tool 5. Start targeting football agents 	<ol style="list-style-type: none"> 1. Keep high retention rates 2. Start introducing additional services 3. Evaluate the possibility to internationalize
Key Assumptions	<ol style="list-style-type: none"> 1. Capacity to hire effective sales people 2. Create a fully functional algorithm 	<ol style="list-style-type: none"> 1. No change in the clients’ needs 2. The players identified are transferred 	<ol style="list-style-type: none"> 1. New services match a clients’ need 2. New markets are identified

	3. Reach decision makers in the industry	3. The sales team is successful	
High Risk Factors	1. Industry is hard to penetrate 2. Small number of clients	1. Clients do not hire the identified players 2. Clients internalize our services in the short term	1. The clients internalize all the additional services developed further

Cost of Customer Acquisition (COCA)

The table 6 in the Appendix shows the forecasted values for Cost of Customer Acquisition (COCA) over a period of 5 years, in order to be compared with the LTV, measuring the attractiveness of FootOwl’s business model. Medium and Long Term projections are grouped as in the previous section. The assumptions for the costs of each item are based on information gathered for a similar study developed for a UX and UI start up operating in Portugal. Consultant expenses are related with a study to assess the attractiveness of exploring international markets in the long-term. Comparing LTV with COCA (Tables 4 and 6 in the Appendix), it can be concluded that, although the customers acquired in the first year come almost at break-even, in the following periods, due to economies of scale, COCA decreases consistently, reaching 36% of LTV in the long-term. From the factors that Bill Aulet identified that contribute to reducing COCA, FootOwl tries to reduce direct sales by investing in digital presence, as the first is very expensive, and designing a business model with low entry costs for the clients, facilitating customer conversion.

Minimum Viable Business Product (MVBP)

In the course of this journey, there was still time to build a prototype based on the data from the interviews, incorporating feedback associated with customer requirements. It consists of a set of programming functions that, based on a player defined by the client and the leagues he intends to search for a similar profile, print a list of players that, potentially, could be a good replacement. The major limitations of this prototype were the ones associated with the database

where the player and league statistical indicators were extracted. Unless it was made manually, it was not possible to filter the players according to their specific field positions, and the statistical indicators were not exhaustive enough. The only data on feedback that was possible to extract and still include in this report was from Miguel Saraiva, Coordinator of the Analysis and Observation Department at Sporting CP. It can be highlighted from his notes (Appendix, Notes From Semi Structured Interviews) on the prototype that the output does not filter specific positions and all the statistical indicators have the same weight when calculating the similarities between players. The latest can be fixed in upcoming feedback loops, even using the same database.

Product Plan

Table 5- Product Plan

Stage	Name	Objective	Result
Stage 1	Validating initial assumptions	Gather feedback on the features that were initially thought	The product was developed accordingly
Stage 2	Creating the first prototype	Create the most accurate and simple version possible	The prototype was successfully built, however, with a limited database
Stage 3	Collecting feedback	Evaluate the transition from the feedback to the product	In progress
Stage 4	Building a final version using a professional database	Include all the features from the previous feedback rounds in a complete version of the product	First semester 2024
Stage 5	Testing with early-adopters	Collaborate with early-costumers in product development in exchange for a discount	First semester 2024

Conclusion and Final Reflections

As this section represents the last step of this process, it is now time to reflect on the steps that exceeded expectations or, after these weeks, still need improvement. The primary market research was by far the most challenging step of this framework. Finding an equilibrium between participants that have value to this project but, at the same time, are accessible for interviews took a few weeks. Approximately 40 people were approached, either directly or indirectly from the participant's intermediation; half of them didn't answer the messages, either mine or from the people making the bridge; only one person didn't participate even with the interview scheduled; however, the final list of interviewees was still solid and provided very useful insights. The proof that the outcome was satisfactory was the ease with which the following steps were completed. The step of mapping the customer acquisition process was also challenging to conclude and to guarantee complete accuracy due to the heterogeneity of procedures among clubs. It was drawn from a general perspective, gathering information from multiple clubs; however, there may exist different processes. The last point that still raises uncertainty is regarding the professional database, namely the WyScout API. The initial goal was to test the early prototypes with that database, allowing the Minimum Viable Business Product, from which we would collect feedback, to be very similar to the final product in terms of features. This was not possible due to budget constraints, and the solution was to use a website that shares some of the same statistical metrics for free. This report is to be delivered during the initial feedback loops of prototyping, which may cause the final product to be different from the concept described in this document, depending on further inputs from participants.

References

- Arastey, Guillermo. "History Of Performance Analysis: The Controversial Pioneer Charles Reep." Sport Performance Analysis, November 27, 2019.
<https://www.sportperformanceanalysis.com/article/history-of-performance-analysis-the-controversial-pioneer-charles-reep>.
- Aulet, Bill. *Disciplined Entrepreneurship*. New Jersey: John Wiley & Sons, Inc., 2013.
- Buchheit, Martin. "Monitoring Training Status with HR Measures: Do All Roads Lead to Rome?" *Frontiers in Physiology* 5 (2014).
<https://www.frontiersin.org/articles/10.3389/fphys.2014.00073>.
- Dar, Pranav. "Introduction to Football Analytics – Top 6 Analytics Metrics You Should Know." *World Football Analytics* (blog), September 5, 2021.
<https://worldfootballanalytics.com/2021/09/05/introduction-to-football-analytics-top-6-analytics-metrics-you-should-know/>.
- Deloitte. "Annual Review of Football Finance." Deloitte United Kingdom, 2023.
<https://www2.deloitte.com/uk/en/pages/sports-business-group/articles/annual-review-of-football-finance-europe.html>.
- Dougramaji, Mohammed. "Data Analytics in Football: How LFC Used Data to Gain the Edge." Rockborne - Graduates, 2023. <https://rockborne.com/graduates/blog/data-analytics-in-football-lfc/>.
- Aulet, Bill. 2023. "Framework (Disciplined Entrepreneurship)." *Disciplined Entrepreneurship* (blog). 2023. <https://www.d-eship.com/en/framework/>.
- Ehrmann, Fabian E., Craig S. Duncan, Doungkamol Sindhusake, William N. Franzsen, and David A. Greene. "GPS and Injury Prevention in Professional Soccer." *The Journal of Strength &*

Conditioning Research 30, no. 2 (February 2016): 360.

<https://doi.org/10.1519/JSC.0000000000001093>.

Ernst & Young. “Anuário Do Futebol Profissional Português,” 2022.

<https://www.ligaportugal.pt/pt/epocas/20222023/publicacoes/anuario-do-futebol-profissional-portugues-2021-22/>.

Fathima, Syed Ali. “Exploratory_analysis_Football.Pdf,” 2018.

https://www.researchgate.net/publication/331100508_Data_analytics_in_football_sport_to_identify_gaps_for_the_improvement_of_quality_opportunities_throughout_world-wide_teams.

Fontanive, Leonardo. “Football Analytics: A Literature Analysis from 2010 to 2020.” Nova IMS, 2021.

Hägglund, Martin, Markus Waldén, Henrik Magnusson, Karolina Kristenson, Håkan Bengtsson, and Jan Ekstrand. “Injuries Affect Team Performance Negatively in Professional Football: An 11-Year Follow-up of the UEFA Champions League Injury Study.” *British Journal of Sports Medicine* 47, no. 12 (August 1, 2013): 738–42. <https://doi.org/10.1136/bjsports-2013-092215>.

Henriques, Francisco. “How Can Big Data Help Football Clubs Achieve Competitive Advantage.” Universidade Católica Portuguesa, 2018.

Lichtenthaler, Ulrich. “Mixing Data Analytics with Intuition: Liverpool Football Club Scores with Integrated Intelligence.” *Journal of Business Strategy* 43, no. 1 (January 1, 2020): 10–16. <https://doi.org/10.1108/JBS-06-2020-0144>.

Memmert, Daniel, Bischof Jürgen, Stefan Endler, Andreas Grunz, Schmid Markus, Schmidt Andrea, and Perl Jürgen. “World-Level Analysis in Top Level Football Analysis and Simulation of Football Specific Group Tactics by Means of Adaptive Neural Networks,” 2011. <https://doi.org/10.5772/14919>.

- Müller, Oliver, Alexander Simons, and Markus Weinmann. "Beyond Crowd Judgments: Data-Driven Estimation of Market Value in Association Football." *European Journal of Operational Research* 263, no. 2 (December 1, 2017): 611–24.
<https://doi.org/10.1016/j.ejor.2017.05.005>.
- nadar, Megh. "Top 10 Ranked Most Popular Sports in The World Right Now." *SportsUnfold* (blog), September 14, 2023. <https://www.sportsunfold.com/top-10-ranked-most-popular-sports-in-the-world-right-now-2022/>.
- O'Hanlon, Ryan. "Agent Fees? Add-Ons? Soccer Transfer Terms Explained." ESPN.com, July 1, 2023. https://www.espn.co.uk/football/insider/insider/story/_/id/37934748/soccer-transfer-terms-explained-fees-loans-clauses-more.
- Pires, Marcelo Renato Cavaleiro. "Impact of Internet of Everything Technologies in Sports - Football," n.d.
- Poli, Raffaele, Loïc Ravenel, and Roger Besson. "Financial Analysis of Big-5 League Clubs' Transfers - CIES Football Observatory," 2022. <https://football-observatory.com/Financial-analysis-of-big-5-league-clubs>.
- Rein, Robert, and Daniel Memmert. "Big Data and Tactical Analysis in Elite Soccer: Future Challenges and Opportunities for Sports Science." *SpringerPlus* 5, no. 1 (August 24, 2016): 1410. <https://doi.org/10.1186/s40064-016-3108-2>.
- Saunders, Mark, Philip Lewis, and Adrian Thornhill. *Research Methods for Business Students*. 4. ed. Harlow: Financial Times Prentice Hall, 2007.
- Toma, Pierluigi, and Francesco Campobasso. "Using Data Analytics to Capture the Strategic and Financial Decision-Making of Europe's Top Football Club." *Technological Forecasting and*

Social Change 186 (January 1, 2023): 122116.

<https://doi.org/10.1016/j.techfore.2022.122116>.

Training Ground Guru. “Training Ground Guru | Monchi: Big Data Is the Future of Football.”

Training Ground Guru, 2019. <https://trainingground.guru/articles/monchi-big-data-is-the-future-of-football>.

Wang, Qing, Hengshu Zhu, Wei Hu, Zhiyong Shen, and Yuan Yao. “Discerning Tactical Patterns for Professional Soccer Teams: An Enhanced Topic Model with Applications,” 2015.

<https://doi.org/10.1145/2783258.2788577>.

XFB. “The History of Football Analytics - Part 1.” xfb Analytics, 2022.

<http://www.xfbanalytics.hu/blog/blog-post/31>.

———. “The History of Football Analytics - Part 2.” xfb Analytics, 2022.

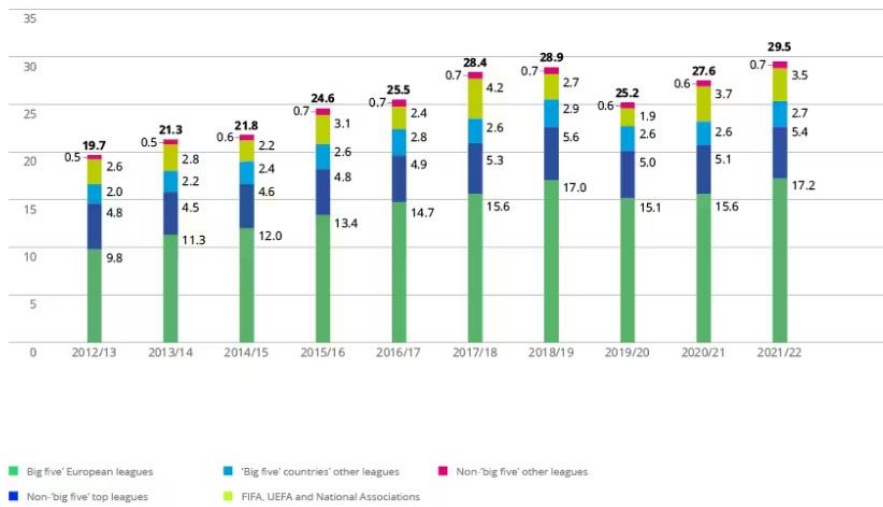
<http://www.xfbanalytics.hu/blog/blog-post/32>.

———. “The History of Football Analytics - Part 3.” xfb Analytics, 2022.

<http://www.xfbanalytics.hu/blog/blog-post/33>.

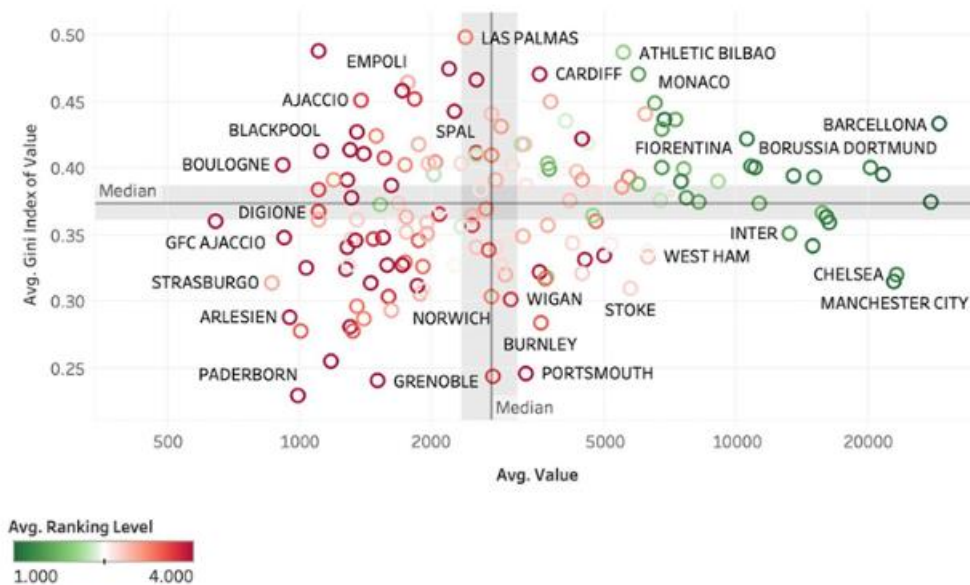
Appendix

European football market size – 2012/13 to 2021/22 (€ billion)



Source: Deloitte's Annual Review of Football Finance 2023.

Graphic 1- European Market Size- 2012/13 to 2021/22 (€billion)



Graphic 2- Using data analytics to capture the strategic and financial decision-making of Europe's top football club (Toma et al. 2023)

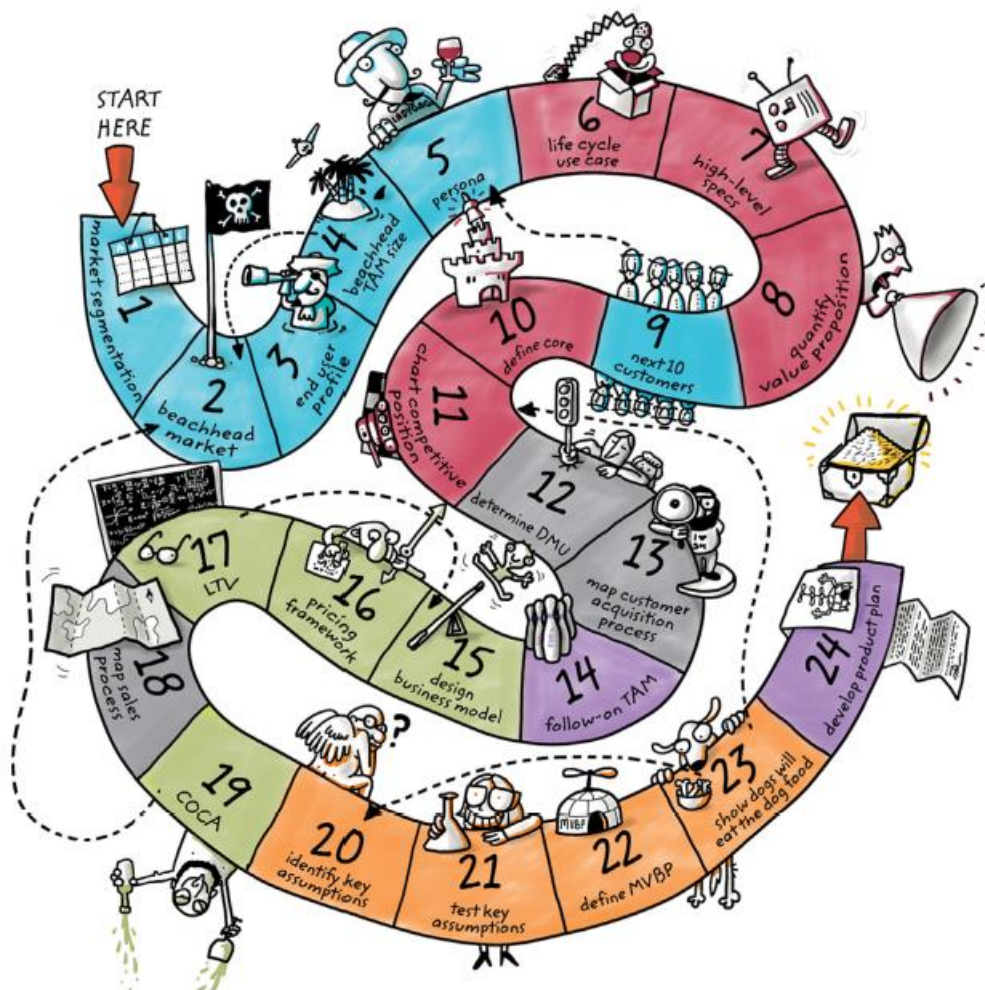


Figure 2- Visual representation of the 24 Steps framework (Aulet 2013)

Club X Market Report

Summer 2024

The client may specify some conditions based on location, position, budget, similarities to a player, desired profile, etc.

↓ Conditions

Country



Position



Budget

<1 M€

Similar to



Players that match the defined conditions better will be shown in this table. This is just a resume as a complete individual description is shown in the following pages.



Similarity Score



90%

Strengths

Passing, Pace

Weaknesses

Aerial Duels



82%

Marking

Passing



71%

Pace

Pace, Agression

Figure 5- High Level Product Specification

Table 4- Life Time Value (LTV) Calculations

Inputs	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Year	0	1	2	3	4	5
Report Price	1 000,00 €					
# reports a year	1	2	2	2	2	2
Gross Margin	100%					
Retention	100%	90%	90%	90%	90%	90%
Cumulative retention	100%	90%	81%	73%	66%	59%
Profit from Reports	1 000,00 €	1 800,00 €	1 620,00 €	1 458,00 €	1 312,20 €	1 180,98 €
Commission Price	9 600,00 €					
# commissions a year	0	1	0	1	0	1
Gross Margin	100%					
Retention		100%	90%	90%	90%	90%
Cumulative retention		100%	90%	81%	73%	66%
Profit from Commissions	- €	9 600,00 €	- €	7 776,00 €	- €	6 298,56 €
Sum of Profits	1 000,00 €	11 400,00 €	1 620,00 €	9 234,00 €	1 312,20 €	7 479,54 €
Cost of capital	35%	35%	35%	35%	35%	35%
Net Present Value Factor	100%	65%	42%	27%	18%	12%
Present Value above Cost of Capital	1 000,00 €	7 410,00 €	684,45 €	2 535,89 €	234,24 €	867,84 €
Net Present Value of Profits (LTV)	12 732,42 €					

Table 6- Cost of Customer Acquisition (COCA) Calculations

Items for Marketing and Sales Budget	Year 1	Year 2	Year 3
Year	1	2	3
Number of Salespeople	1	2	3
Sales Team Salary	23 000,00 €	46 000,00 €	69 000,00 €
Travel	10 000,00 €	15 000,00 €	20 000,00 €
Website Cost	10 000,00 €	5 000,00 €	5 000,00 €
Social Media Advertising	20 000,00 €	10 000,00 €	10 000,00 €
Consultants			10 000,00 €
Total	63 000,00 €	76 000,00 €	114 000,00 €
New Customers	5	6	11
Customers from Previous Year		4	9
Number of customers	5	10	20
COCA for year	12 600,00 €	7 600,00 €	5 700,00 €

Notes From Semi Structured Interviews

Interview 1

Interviewee's name	Pedro Santos
Organization	Rio Ave FC
Role	Technical Coordinator
Interview Date	18/10/2023
Location	Via Zoom
Length	40 minutes
Interview history (i.e. is this 1st, 2nd interview)	1 st interview

1. In general how did the interview go?

Above expectations. The two main priorities were met: collecting market information and contacts in the industry that may facilitate further interviews.

2. How did it flow? How much of the interview is 'useful' for the research project?

It went more like a conversation where two former colleagues discussed market-related topics in a casual way. 70% of the conversation will be useful for my thesis, with the other 30% important for my personal market understanding.

3. In brief, what were the main findings for each theme discussed in the interview?

First theme- Importance of Data in his organization. Pedro (responsible for the Academy Teams) mentioned that Rio Ave uses a GPS track device in the U23 team and plans to implement it in the teams below. The data is sent to the physiologists to track physical indicators. For recruitment, due to legal restrictions, Rio Ave is only focused on the internal market, for which they have their coaches and part-time scouts to spot talent to incorporate their teams. The factor that justifies the low use of Data is its availability for such low ages in Youth Football. The medium-term strategy is to incorporate a department of analysts that can collect and analyze data, which is financially difficult to implement in the short term because of the club's budget constraints. They also use the Wyscout platform to visualize matches and perform traditional video analysis. He perceives Sporting CP and SC Braga as role models in the area.

Second Theme- Organization's Structure. I learned more about how Rio Ave is structured. Basically, Pedro Santos structured each team to have an analyst on each category, which traditionally encompasses the coaches and physical preparation staff. In terms of Scouting, due to the restrictions that Rio Ave's facing, they have one scout for the North Region, one for the South Region and sporadic scouts. Third Theme. Our Service. After the initial description of FootOwl's service, Pedro mentioned that he sees it as a profit enhancer, that opens many opportunities in the transfer market. He doesn't see any rivals to this service in the national market at the moment.

4. What were the most significant or interesting discussions within the interview?

The first theme because it allowed me to understand how a club works and what are its constraints.

5. Final thoughts/comments

Due to Pedro's help, I now have 3 new contacts and one confirmation for a future interview.

Interview 2

Interviewee's name	Luís Sobral
Organization	Empower Sports
Role	VP for Public Relations
Interview Date	19/10/2023
Location	Via Teams
Length	25 minutes
Interview history (i.e. is this 1st, 2nd interview)	2 nd interview

1. In general how did the interview go?

Somewhat above what I expected. The industry in general (PR for players, coaches, events and clubs) didn't seem like an obvious match, however, it opened my horizons to a new market.

2. How did it flow? How much of the interview is 'useful' for the research project?

It went very well at a fast pace. Almost everything was useful, because unlike Pedro Santos' conversations in which I already knew him and we had a small chat, with Luís I made the questions and he answered very clearly.

3. In brief, what were the main findings for each theme discussed in the interview?

1st theme-The way they use data. Initially, Luís told me they don't use data; however, he restated, saying that, in fact, they use it to promote their clients when needed. They create social media posts using data that creates a good image of their clients; they talk to journalists when they are trying to promote a player and journalists, when working on an article, ask them for interesting insights. Their use of data increases as the season proceeds due to a larger sample available. 2nd Theme Partnership with GoalPoint. GoalPoint is their data source. Regularly updates an Excell file with interesting data about their clients that is used by Empower Sports. They also ask for specific data when trying to communicate a specific message (an evolution in performance, a comparison with other players, etc.) 3rd Benefits of data. Data for them adds credibility to the message being communicated, and so, the effort they need to put into communicating it is less, saving time.

4. What were the most significant or interesting discussions within the interview? The first theme, because it allowed me to understand how communication works, especially in relation to journalists. The second theme was also interesting because of the relationship between them and GoalPoint. I understand now how they use data.

5. Final thoughts/comments

Luís will helping me with more contacts to interview.

Interview 3

Interviewee's name	Carlos Campos
Organization	FC Famalicão
Role	Academy Director
Interview Date	23/10/2023
Location	Via Phone Call
Length	20 minutes
Interview history (i.e. is this 1st, 2nd interview)	3 rd interview

1. In general how did the interview go?

It was a great interview in which Carlos provided very clear answers that helped to structure my assumptions about one end user that I initially assumed to be very interested in FootOwl's services.

2. How did it flow? How much of the interview is 'useful' for the research project?

Very smoothly conversation, with Carlos answering almost more than one question at a time without me asking for it. 90% of the content will be of extreme importance for the project.

3. In brief, what were the main findings for each theme discussed in the interview?

First Topic- Current Data Strategy at FC Famalicão. Currently, Fc Famalicão in its teams under Carlos' responsibility (U23 and all below), gathers data via a GPS system and, using solely each team's staff, gathers performance metrics, individual and collective. The staff relies on their experience first to assess a player, and metrics are used to support their decisions or identify specific patterns. Second Topic- Future of Data Analysis at FC Famalicão. In their short term plans, a Data Analytics department is not being considered, as the club has other priorities to be accomplished, which is normal for a club that has experienced big growth in recent years. However, they are currently monitoring the data revolution that many football clubs are experiencing and evaluating the advantages of taking the next step. If they can justify the importance of it to the board, it is then a question of budget allocation, and FC Famalicão will incorporate a Data Analysis department into their current organization. Carlos perceives data as a revenue enhancer, that fits Famalicão's business model of finding talent, potentiating it,

and selling to bigger clubs. Carlos sees data as a prefilter to select only the most suitable talent and the one that is expected to generate more revenue.

4. What were the most significant or interesting discussions within the interview?

The second, as I gained knowledge on the priority of data for a very structured club in Portugal.

5. Final thoughts/comments

Carlos will put me in contact with FC Famalicão's U23 coach.

Interview 4

Interviewee's name	Afonso Cabral
Organization	Su Sintrense
Role	Coach
Interview Date	24/10/2023
Location	Via Teams
Length	40 minutes
Interview history (i.e. is this 1st, 2nd interview)	4 th interview

1. In general how did the interview go?

Afonso, before the interview, had doubts about the value he could bring to my thesis; however, he ended up being one of the best interviews I have had until now. Although his team plays in the 4th tier of football, the tools they use put them ahead of other teams and are a good example of data transition.

2. How did it flow? How much of the interview is 'useful' for the research project?

It was a nice conversation between 2 people that work for the same club, in which we had an initial chat about the season of the team we work for. I would say that 70% of the interview was useful for the project.

3. In brief, what were the main findings for each theme discussed in the interview?

First Topic- Data in SU Sintrense. In this first part, Afonso told me how they use data at SU Sintrense. They pay for the platform WyScout to get post-match statistical reports; they use GPS data to extract fatigue indicators and adjust the training sessions accordingly; and a friend from Afonso developed an algorithm to help him filter potential transfer targets. Afonso is an example of this new generation of young coaches who make use of data to support decision-making. For him, data is a complement to what his eyes observe, and he proved that with a few examples. He uses pass networks from WyScout reports to assess the value of its defenders' passes and adjust training sessions if he sees that his players are exceeding the normal effort rate. WyScout is used almost exclusively by Afonso himself, GPS data is the responsibility of the physical preparator, and the algorithm is shared between Afonso and his analysts. Second

Topic- Footowl and its Services Afonso considered that a service like FootOwl's can save clubs much time by helping in the filtration of markets and players. Having a list of players that statistically fit the team's style is, according to Afonso, better than having to search for all the players in 2 or 3 divisions only by assisting matches. He explained his algorithm and how it helped him identify three players last season, that were validated both through statistics and match visualization. Those types of algorithms are precisely one of the services provided by FootOwl, and being validated by Afonso was really helpful.

4. What were the most significant or interesting discussions within the interview?

The discussion around the second topic, since I gained knowledge on a service that FootOwl will probably provide.

5. Final thoughts/comments

Afonso showed me concrete examples of data usage that were very helpful.

Interview 5

Interviewee's name	Abel Silva
Organization	CAPP
Role	Sporting Director
Interview Date	25/10/2023
Location	Via Phone Call
Length	20 minutes
Interview history (i.e. is this 1st, 2nd interview)	5 th interview

1. In general how did the interview go?

This conversation went very well, as I listened to Abel, that being the director of a recently promoted Liga 3 club means he is living the reality of a club in constant transformation and adaptation to this new reality.

2. How did it flow? How much of the interview is 'useful' for the research project?

Abel answered in a clear way to everything I asked. I made the questions, and he answered with a nice level of detail. At the end, we talked about my experience at Sintrense and his at Benfica, some years ago. 80% of it was extremely useful.

3. In brief, what were the main findings for each theme discussed in the interview?

We centered our conversation around the present use of data by CAPP and what the plans are for the near future. Presently, they pay for WyScout just to perform opponent analysis and are negotiating a GPS contract. They don't make further use of the data. In the future, they have in mind creating a department responsible for scouting and performance analysis. That will incorporate people from analytical and sports backgrounds. They are presumably a potential FootOwl's client, which could help CAPP in this transition.

Interview 6

Interviewee's name	Gonçalo Rendeiro
Organization	GD Estoril Praia
Role	Sport Scientist
Interview Date	25/10/2023
Location	Via Teams
Length	30 minutes
Interview history (i.e. is this 1st, 2nd interview)	6 th interview

1. In general how did the interview go?

Gonçalo, with a high degree of specialization in the area and deeper knowledge about all the technological tools that are used by a professional football club, was a valuable interviewee, and the conversation was very productive.

2. How did it flow? How much of the interview is 'useful' for the research project?

In the beginning, we had a brief chat about our professional situation, but right after, we proceeded with the questions, so almost the entire time was dedicated to the project.

3. In brief, what were the main findings for each theme discussed in the interview?

First Topic- Data at Estoril- Gonçalo enumerated around 10 software programs that Estoril uses in its day-to-day activities that put Estoril very well positioned in this data transition. They use video providers such as WyScout and SkillCorner, GPS tracking devices, software to analyze physical data, etc. All the departments that support the first team, somehow, have professionals capable of extracting insights from data and working with the software available.

Personal opinion about FootOwl services- The second part of the interview was dedicated to hearing from Gonçalo about his opinions about Footowl's possible services. The scouting reports are considered extremely useful as a complement to a club's scouting department, if they need an extra pair of hands to reach a specific market or an extra opinion about a player. The scouting reports are considered extremely useful as a complement to a club's scouting department, if they need an extra pair of hands to reach a specific market or an extra opinion about a player. The advisory on data transition, in his opinion, is more useful in educating

professionals to extract good insights from data, rather than advising how to use specific software and which to pay for, because that is the role of the sales department at those companies.

4. Final thoughts/comments

Afonso showed me concrete examples of data usage that were very helpful.

Interview 7

Interviewee's name	António José Pereira
Organization	SC Braga
Role	Academy Director
Interview Date	27/10/2023
Location	Via Phone Call
Length	20 minutes
Interview history (i.e. is this 1st, 2nd interview)	7 th interview

1. In general how did the interview go?

This conversation contributed in a considerable way to assessing the value of this service for this type of end user.

2. How did it flow? How much of the interview is 'useful' for the research project?

Almost the entire interview was useful for the project.

3. In brief, what were the main findings for each theme discussed in the interview?

The structure was similar to other interviews, with the first part about what was being implemented in the organization and the second part about this service. SC Braga has GPS devices to track physical indicators from their U19 and U23 teams, previously used by the A team, and uses WyScout to analyze matches from opponent teams. They are creating a department that uses data to optimize questions regarding fan engagement and stadium occupation. Regarding FootOwl services, António José considers them very useful to save time from clubs by filtering the multiple options a club has when approaching a new market just to a list of a few that suit better.

4. Final thoughts/comments

António José mentioned that an affordable and intuitive product is needed and, he would be interested to acquire something with those characteristics.

Interview 8

Interviewee's name	João Rosa
Organization	Sporting CP
Role	Women's Team Scout
Interview Date	28/10/2023
Location	Via Phone Call
Length	20 minutes
Interview history (i.e. is this 1st, 2nd interview)	8 th interview

1. In general how did the interview go?

As with all the other interviews, it was a good conversation, where João shared his experience in a world about which I don't have that much knowledge, which is Women's Football.

2. How did it flow? How much of the interview is 'useful' for the research project?

During the conversation, I learned a lot about the differences between men's and women's football that are still visible, even if great efforts are being made to shorten that gap.

3. In brief, what were the main findings for each theme discussed in the interview?

João firstly answered some questions regarding his department's current resources and then, as in other interviews I conducted, about FootOwl's services. Sporting, a couple of years ago, decided to create a scouting department to work with the Women's Team, which is run by João, that basically tries to spot talent for the first team, with more success in the US university league. They use tools, such as WyScout as a prefilter to create a short list of players that will be observed in person. Since João works with the US market, this type of tool is very important as it saves time and resources, such as in long distance travels in that country.

Regarding FootOwl's service, João considers it a good complement to the work being developed by Scouting departments of clubs with a bigger structure than his. It saves time as the professionals can work with just a shortlist instead of exploring the market from scratch.

Interview 9

Interviewee's name	Miguel Farinha
Organization	EY
Role	Partner
Interview Date	31/10/2023
Location	Via Teams
Length	20 minutes
Interview history (i.e. is this 1st, 2nd interview)	9 th interview

1. In general how did the interview go?

In this conversation, I had the opportunity to gather insights on a macro level regarding the reality of Portuguese football. Miguel was the author of the “Anuário do Futebol Português,” an annual report on the financial level of all clubs from the first two divisions.

2. How did it flow? How much of the interview is ‘useful’ for the research project?

All the content of this conversation was useful for the project, even though Miguel is not from a data or a football background, which raised some doubts about the pertinence of the conversation. However, after a couple of minutes, the amount of information I obtained was very satisfying.

3. In brief, what were the main findings for each theme discussed in the interview?

I tried to get specific insights that hopefully will structure my assumptions about the money my potential customers will be able to pay for our services in the medium term. Basically, the conversation was all around the money from TV rights that clubs will receive after the centralization of them, I which a collective deal will be negotiated and the money distributed by the clubs according to their contribution to the league's attractiveness. Clubs have 4 main revenue sources: European competitions (only a few play them), Audiovisuals, Transfers and Match day sales. For smaller clubs, the centralization will mean a significant increase in revenue (Audiovisuals category) in two different ways: A bigger stake in the total contract amount is expected, and the total contract amount is expected to increase based on the Spanish League case study (they centralized their TV rights some years ago). The gap between what the 3

biggest clubs earn by negotiating their deals individually and the other clubs is 14 to 15 times, very different from the 1,2 times in England and 2 to 3 times in other leagues, and very penalizing for the last ones. For obvious reasons, that was not accepted by the biggest clubs, and the Portuguese government had to intervene and set 2026 as the year in which a deal would have to be signed between all the clubs. Now, a deal is being made on the merger, as a study shows that the total contract, after centralization, is expected to increase by 50% in a few years. We also discussed two other different curiosities. The first one was that clubs from Liga 2 don't have a sustainable business model behind them, and their only way to survive, unless they have an investor, is to get promoted. The second one is that Miguel does not foresee clubs investing that money in the most essential need, which is infrastructure. His idea is that all the money will be spent on transfers and all the involved stakeholders. For obvious reasons, that was not accepted by the biggest clubs, and the Portuguese government had to intervene and set 2026 as the year in which a deal would have to be signed between all the clubs. Now, a deal is being made on the merger, as a study shows that the total contract, after centralization, is expected to increase by 50% in a few years. We also discussed two other different curiosities. The first one was that clubs from Liga 2 don't have a sustainable business model behind them, and their only way to survive, unless they have an investor, is to get promoted. The second one is that Miguel does not foresee clubs investing that money in the most essential need, which is infrastructure. His idea is that all the money will be spent on transfers and all the involved stakeholders.

Interview 10

Interviewee's name	Rui Tomé
Organization	FC Famalicão
Role	U23 coach
Interview Date	31/10/2023
Location	Via Phone Call
Length	15 minutes
Interview history (i.e. is this 1st, 2nd interview)	10 th interview

1. In general how did the interview go?

FC Famalicão won the U19 national championship last year, with many players being promoted to their U23 team, and so I perceived this conversation as extremely useful. It matched my expectations, as Rui answered all my questions with the maximum sincerity.

2. How did it flow? How much of the interview is 'useful' for the research project?

The conversation was very useful as, even though Famalicão in its U23 team does not have an intensive use of data tools, the knowledge shown by Rui will be very important for my project.

3. In brief, what were the main findings for each theme discussed in the interview?

Initially, we discussed how Famalicão uses data for its U23 team. As SC Braga, they have WyScout to analyze opponents' matches and GPS devices to collect physical indicators. They intend to increase their data usage in the future, but it is not a priority for the time being. Regarding FootOwl's services, Rui sees them as very useful to prefilter players in new markets and support the scouting department, in cases where their collaborators are not enough to cover a vast number of markets. It saves time to have a service like that, in his opinion. He is inspired, in terms of data topics, by the AZ Alkmaar case study.

Interview 11

Interviewee's name	Luís Ricardo
Organization	Gil Vicente Futebol Clube
Role	Technical Director
Interview Date	3/11/2023
Location	Via Phone Call
Length	15 minutes
Interview history (i.e. is this 1st, 2nd interview)	11 th interview

1. In general how did the interview go?

It was similar to other interviews, namely with António José from SC Braga and Carlos Campos from FC Famalicão, as well as technical and academic directors from 1st league clubs. Luís was very open to specifying some details about the club and the way it is organized.

2. How did it flow? How much of the interview is 'useful' for the research project?

Due to time constraints, I tried to be brief, and so all the conversation was around the specific questions about the project, leaving very little time for other topics.

3. In brief, what were the main findings for each theme discussed in the interview?

Gil Vicente uses the same software as other clubs, WyScout and GPS devices (just on the U23 team). WyScout is useful to validate targets previously identified by the scouting department or by agents. That department has three people working on it, a director, a local scout, and a national scout. When asked about FootOwl's services, Luís thinks they are useful to save time, money and increase potential revenues. He doesn't know of any company providing similar services.

Interview 12

Interviewee’s name	Estela Lucas
Organization	FPF
Role	Intelligence and Fan Engagement Director
Interview Date	10/11/2023
Location	Via Teams
Length	25 minutes
Interview history (i.e. is this 1st, 2nd interview)	12 th interview

1. In general how did the interview go?

As a data enthusiast, this was the most interesting interview in which I talked to a person who leads a department fully centered on data that supports both the national team and the marketing department. Her interests are very similar to mine, and it was a pleasure to have the opportunity to have this conversation.

2. How did it flow? How much of the interview is ‘useful’ for the research project?

It was almost everything around my project. The goal was to understand why FPF needed a data department back in the day, how it evolved, how they work now, and what their future plans are.

3. In brief, what were the main findings for each theme discussed in the interview?

1. Why an intelligence and Fan Engagement department? It was founded in 2018 as a challenge created by the CEO. The goal was to know their fans, learn how to approach them, and keep them engaged.

2. Challenges over time. At the beginning, all the information was spread across multiple platforms. So, the first challenge was to centralize it and clean it. The email address is the central point.

3. How do they work. They hired data scientists to develop models to analyze their clients. That allowed their email marketing to be extremely successful and create very insightful dashboards to support decision-making. Recently, they started working with the National Coach to provide data to help him choose which players to choose from. They also develop case studies

describing their results that will hopefully serve as a baseline for other clubs to learn what to do with their data.

4. Future Plans. They want to create predictive models to forecast sales, convert clients, develop analytical support for every Football National Team in Portugal and develop a Football Observatory

Interview 13

Interviewee's name	Bernardo Dias
Organization	SCU Torreense
Role	Player
Interview Date	13/11/2023
Location	Via Phone Call
Length	10 minutes
Interview history (i.e. is this 1st, 2nd interview)	13 th interview

1. In general how did the interview go?

As this was my first interview with a professional football player, I didn't have any expectations of what to expect, but Bernardo answered my questions very clearly, which will be a good support for my project.

2. How did it flow? How much of the interview is 'useful' for the research project?

All the content will be very useful for my project. I asked him how he uses data in his daily life and how it affects his decision on changing clubs

3. In brief, what were the main findings for each theme discussed in the interview?

When he played in Cyprus, he used to request from his club the recording of his games and some statistics. At SCU Torreense, there is a structured data and performance department that shows him clips and important statistics they may find useful. He does not request or explore many alternative sources. The transfer decisions are often shown by his agent based on his contacts and club approaches and are not data-based.

Interview 14

Interviewee's name	Kailash Morjaria
Organization	Freelancer
Role	Certified Agent
Interview Date	23/11/2023
Location	Via Teams
Length	30 minutes
Interview history (i.e. is this 1st, 2nd interview)	14 th interview

1. In general how did the interview go?

This was the first call for which the original purpose was not this work project. Kailash contacted me to discuss the quality of some players from the Sintrense senior team and my availability to help him with statistics for his potential clients. That made me think about the agent's willingness to adopt FootOwl's services.

2. How did it flow? How much of the interview is 'useful' for the research project?

It was a smooth conversation in which the first part was about Kailash's topics and the final part was about my work project.

3. In brief, what were the main findings for each theme discussed in the interview?

From the part that was valuable for this work project, I could acknowledge the scene in the United Kingdom, where the main agencies have data scientists employed full-time to develop models to detect talent in the least obvious ways. Some of them use videogames, like FIFA or Football Manager to extract data from players, for instance. However, freelance agents like Kailash don't have the capacity to pay for professional databases and staff to extract value from them. That made me ask him if FootOwl's services would guarantee the access to data they need. He agreed, saying that it creates conditions for freelancers to compete with agencies. Data in the UK scene is the norm, from what I understood from his words.

4. Final thoughts/comments

These conclusions are not transferable to the Portuguese scene, which, in the short term, does not validate the assumptions needed for the market narrowing process.

Interview 15

Interviewee's name	Luís Vilar
Organization	Nova SBE and CNN
Role	Executive Director and Opinion Maker
Interview Date	30/11/2023
Location	Via Teams
Length	40 minutes
Interview history (i.e. is this 1st, 2nd interview)	15 th interview

1. In general how did the interview go?

Luís was a great guest and provided instrumental pieces of information. His speech was fluid and very rich in detail. We spoke for about 40 minutes without me having to ask lots of questions since he explained in detail every aspect we discussed.

2. How did it flow? How much of the interview is 'useful' for the research project?

From his background as a sports opinion maker, Luís knows loads of interesting curiosities about transfer rumors that he shared with me. Because of that, half of the conversation was around those topics and the other half was around the work project.

3. In brief, what were the main findings for each theme discussed in the interview?

Excluding the topics regarding transfer rumors, Luís explained to me more about players' agents and intermediaries. I understood that the first is responsible for many logistic aspects of a player's life and is paid via a commission/fixed fee of his salary or a commission charged on an eventual transfer. They can only have contracts with a player for 2 years and have clear incentives to promote transfers. In the case of less established agents, they used to identify players at youth competitions to secure a contract with young prospects at very young ages. Established agents used to go for world-class players, even if they already had an agent, because they could offer them a contract with a bigger team to press for the player to switch sides. Intermediaries profit only from commissions charged for their intermediation. They are usually people with strong networks of club directors, presidents, etc., and try to secure mandates from them to negotiate specific players for the clubs.

4. Final thoughts/comments

The player agency was a topic that I hadn't any clear information yet and due to Luís's help, I could acquire a complete vision of this industry and cover all the potential clients.

Interview 16

Interviewee's name	Miguel Saraiva
Organization	Sporting CP
Role	Department of Observation and Analysis Coordinator
Interview Date	07/12/2023
Location	In person
Length	10 minutes
Interview history (i.e. is this 1st, 2nd interview)	16 th interview

1. In general how did the interview go?

Due to professional reasons, I had the opportunity to be close to Miguel and ask his opinion regarding FootOwl's first prototype. This was not an interview about the industry like the other 15, but more of me requesting his feedback. Miguel works as the Coordinator of Observation and Analysis at Sporting CP, which is responsible for collecting video and data from matches of all youth categories that Sporting has above the U14.

2. How did it flow? How much of the interview is 'useful' for the research project?

I ran the programming functions that are part of the prototype and printed their output, based on a Sporting CP player and the top 5 leagues, to create a scenario very similar to a real-world scenario. Then I basically heard from Miguel about the recommendations and limitations of the results. Thus it was all centered on the working project.

3. In brief, what were the main findings for each theme discussed in the interview?

After printing the results, it was clear what limitations the free database I am using has. Miguel spotted that the players with similar profiles, most of the time, play at different field positions because in that database it is not possible to filter by position. Regarding specific aspects that could be improved in that phase, he mentioned the weights that should be attributed to stats that are more important to the positions the player to be analyzed plays in.

4. Final thoughts/comments

This first feedback loop was very useful for the project as it highlighted the database limitations, according to someone from the industry, and potentiated incremental improvements to the prototype.