





Module 1. Introduction to Business Intelligence





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Unit 1.1 Business Intelligence (BI) Fundamentals

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Nowadays, it's widely recognized across professional fields that business intelligence is one of the most promising and essential areas, both for its analytical and strategic aspects, as it plays a key role in decision-making processes across all types of businesses.

However, there's often confusion around the term business intelligence, as it's frequently associated or not distinguished from fields like data science, big data, or data analytics.

In our view, SAP, the German multinational leader in business management software, provides one of the most accurate definitions of business intelligence. SAP is currently a European leader in the sector and ranks third worldwide. SAP defines business intelligence as: business intelligence refers to the processes and tools that help analyze business data, transforming it into actionable strategic information to enable more informed and better decisions across the organization (SAP, n. d., <https://shorturl.at/coDGS>). Additionally, SAP emphasizes another crucial aspect of business intelligence: descriptive analytics. "A BI system analyzes both current and historical data, presenting its findings in user-friendly formats such as reports, dashboards, graphs, and maps, which can be shared company-wide" (SAP, d. d., <https://shorturl.at/coDGS>).

The goal is to provide insights into how the business is currently performing, how it performed in the past, and to answer questions like what happened and what should change, though it doesn't delve into the reasons behind those outcomes or predict future developments (SAP, n. d., <https://shorturl.at/coDGS>).

Without question, business intelligence has a significant cross-functional impact on any type of organization, affecting all areas and levels, as well as its suppliers, customers, products, services, and competitors. In this regard, we highlight some examples, outlined by Munar (2013, <https://shorturl.at/hlpxQ>), of typical areas within an organization where business intelligence can have a considerable impact.

Finance

By integrating financial data with operational, marketing, and sales data, users can extract insights to make more informed decisions and better understand the factors influencing profits and losses.

Figure 1. BI dashboard displaying financial performance across all countries and business units



Source: SAP, n. d., <https://shorturl.at/coDGS>.

Marketing

BI tools enable marketing professionals to track campaign performance metrics from a central digital platform. BI systems allow for real-time campaign tracking, evaluate the effectiveness of each effort, and support future campaign planning. These insights offer marketing teams greater visibility into overall performance, providing visual context they can share across the company.

Sales

Sales data analysts and operations managers often rely on BI dashboards and key performance indicators (KPIs) to quickly access complex information such as discount analyses, customer profitability, and customer lifetime value. Sales managers can monitor revenue goals, evaluate sales representative performance, and track the progress of ongoing sales through dashboards with reports and visual data representations.

Operations

Managers can save time and resources by accessing and analyzing data like supply chain metrics to optimize processes. BI can also help ensure compliance with service-level agreements and improve distribution routes.

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Unit 1.2 Key Pillars of BI in Sports

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When applying business intelligence to the sports industry specifically, we can identify several immediate objectives (mission) and medium-to-long-term goals or aspirations (vision).

Mission

The primary function of a business intelligence team within any sports organization can be compared to that of an internal consulting department. It's an internal consulting team with the following objectives.

- Assisting the organization in improving its performance across various areas year after year, making it more competitive, unique, and maximizing revenue growth.
- Developing a deep understanding of the market/industry and identifying key performance indicators (KPIs).
- Understanding the needs and objectives of different departments (internal clients) to provide them with key data, insights, or solutions that improve performance and help them succeed.

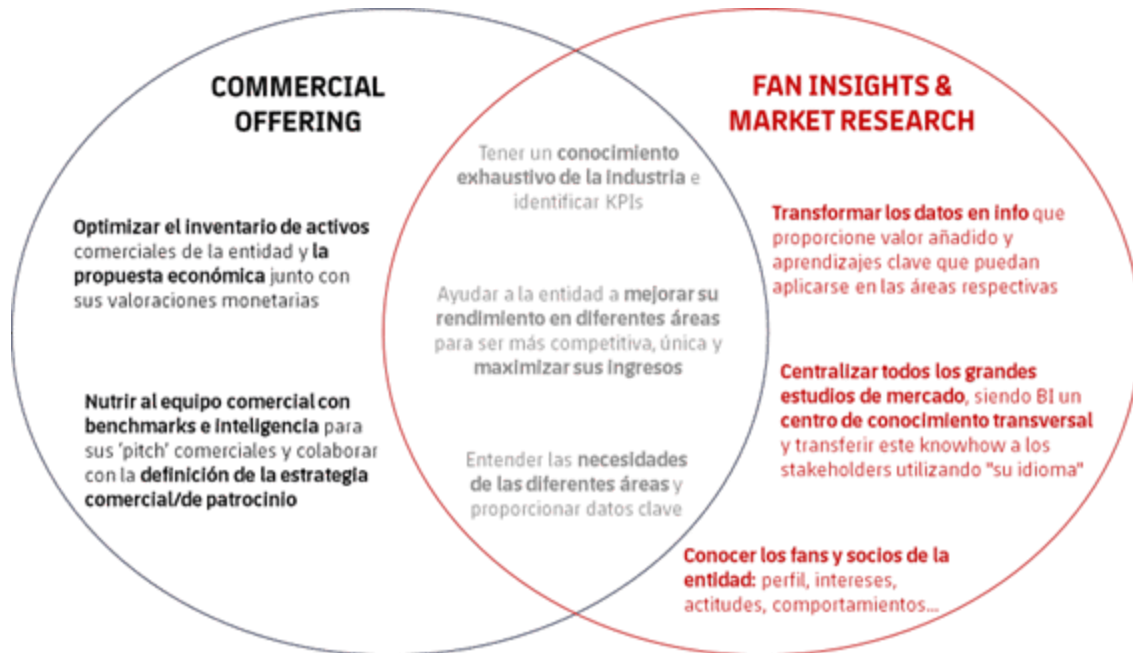
Mission

As for the vision, which outlines the department's medium-to-long-term goals and aspirations, we highlight the following key points.

- Optimizing the organization's/club's inventory of commercial assets, refining its economic proposals, and accurately valuing those assets, while also identifying innovations in this area.
- Providing the commercial team with valuable data, insights, and intelligence for use in their commercial pitches. Collaborating with the team to identify opportunities and help shape the commercial/sponsorship strategy.
- Centralizing all major market research within the organization/club to establish business intelligence as a cross-functional knowledge hub. Furthermore, sharing and transferring this know-how to relevant stakeholders in a way that resonates with them.
- In line with the above, transforming data into meaningful information that offers valuable insights and can be applied across departments to achieve their objectives.
- Gaining a deep understanding of the organization's fans and members, including their opinions, needs, interests, attitudes, and behaviors.

These objectives and aspirations can be grouped into two key pillars that define how a business intelligence team is structured within any sports club or organization. These two pillars are **Commercial Offering** and **Fan Insights & Market Research**, which encompass the mission and vision described above, as illustrated in the following infographic.

Figure 2. Key Pillars



Source: Original work

With this structure based on the two key pillars of BI in sports organizations, we can identify the main internal clients (departments within the club/organization) served by each sub-team. We will explore this in more depth in the final section of this module (1.5. Internal Clients of BI).

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Unit 1.3 Data Management

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Data management is becoming increasingly crucial in the business world, and this trend is extending to the sports sector. Historically, sports have always attracted a dedicated fanbase, but there wasn't much focus on understanding them better, as the business relied on traditional revenue models like sponsorships and ticketing.

As the world has evolved and competition for entertainment has intensified, sports organizations have found it increasingly difficult to engage their fans and cultivate new generations of followers. Today, it's no longer enough to offer the same products to everyone; you need to provide exactly what each person is looking for, and this is where data becomes essential.

The sports industry has a significant advantage—it already has a database of fans from which to begin gathering insights. The challenge is in developing the right structures and mechanisms to gather, process, and analyze the information.



Approaching Commercial Data in the Sports Business

- Large organization – small staff.
 - Teams are large organizations with relatively small staff, so adopting technology and making use of data are major differentiators that allow them to make better decisions and manage their resources more efficiently.

- Constant change.
 - Rapid shifts in demographics and the global economy mean that sports properties must continuously adapt and explore new business models to stay competitive.

● **Challenges Facing the Sports Industry**

- Attention.
 - Fans' attention is increasingly fragmented and shorter than ever.
 - The amount of information available is vast and growing exponentially.
- Declining engagement.
 - Fan engagement with sports properties is decreasing, and organizations must find ways to re-engage them.
- Increased expectations.
 - Fans and customers are more demanding than ever.
 - Today, personalization is the key differentiator for any business, and the sports industry is no exception—especially when there's so much data available about fans.

● **Opportunities**

- Passion.

- Sports properties benefit from having highly passionate and loyal customers who are deeply committed to their institution. This provides an opportunity to gather more information and, consequently, generate more revenue from their fanbase.
- Loyalty.
 - Unlike other industries, even during tough times for a sports institution, fans remain loyal, ensuring continued engagement.
- Abundant content.
 - Sports properties are no longer just sports entities—they've also become media companies. With a wide array of communication channels available, they can produce a constant stream of content—not just on match day—which enables regular interaction with fans and new potential business models. Sports properties no longer compete solely with other sports entities but with any entertainment company. Depending on the sports organization, media coverage can be extensive, extending beyond just internal channels.

What exactly is big data?

When we hear about data, many of us associate it with the term "big data." Today, big data is a common topic, especially regarding its relevance and impact. It's essential to grasp its meaning and how it applies in the world of sports.

Here's a market-based definition of big data: "Big data refers to vast amounts of user information generated by apps, online transactions, or machine logs. It also includes collecting, managing, classifying, and efficiently analyzing this data using various tools and software" (Coppola, 2023, <https://shorturl.at/bnqF7>).

In sports, this refers to every point of interaction with fans, where we gather relevant data about them. This data can come from numerous sources, including the following:

- **Ticket sales.**
 - When fans purchase tickets and share their personal information and that of their companions.
- **Commercial sales.**
 - When fans buy merchandise and provide their details.
- **Apps.**

Whenever they interact with a sports entity's app or website. Example:

Figure 3. FC Barcelona's various sources of big data collection



Source: Original work

Every fan interaction is a data point, which can be fed into a database, building a comprehensive big data set for the entity. The "big" part refers to the large amount of data we collect, although it doesn't necessarily start out huge. What's crucial is for the sports entity to start tracking and gradually collecting more data, eventually building a large, valuable dataset that enhances the business.

A solid big data model is built on five key characteristics (Coppola, 2023, <https://shorturl.at/bnqF7>)

- 1** **Volume:** significant data storage capacity from the gathered information.
- 2** **Veracity:** the data must be accurate and verifiable by the fan base. Data should come from trustworthy internal or external sources.
- 3** **Velocity:** the data should ideally be collected and processed in real-time.
- 4** **Variety:** data should come from diverse sources to get a broad perspective and avoid biases, enabling a well-rounded analysis of the entity's environment.
- 5** **Value:** data should be useful for improving processes and uncovering better business opportunities. Ultimately, all this information should lead to enhancements for the entity.

Categories of big data (Coppola, 2023, <https://shorturl.at/bnqF7>)

Data comes in various forms. The two main ways to structure it are as follows:

1

Structured data.

1. Typically, numerical data that has a defined format and size.
2. It's mainly managed using spreadsheet formats

2

Unstructured data.

1. Data that isn't organized or arranged hierarchically. In other words, the information isn't linked or related in a structured way. Usually, this data comes from text documents, images, or videos.

Why is big data important, and what should we do with it?

As mentioned, big data in sports spans multiple categories and holds tremendous value.

- Customer Relationship Management (CRM).
- Ticket sales.
- Social media.
- Mobile apps.
- Etc.

How can this data be used?

There are many ways to utilize the data collected from various sources. Key applications include the following:

- **Measure and maximize business revenue.**
 - Identify current revenue streams and analyze areas with the greatest potential for boosting income for the entity.
- **Gain real-time visibility into sponsorship and hospitality sales.**
 - Understand how sales are performing in real-time to make adjustments during the season rather than reacting afterward, providing solutions to issues as they arise. By monitoring real-time data on sponsorship or ticket sales, we can alter our business strategies and learn for future events.
- **Enhance the customer and fan experience.**
 - Knowing what your fans and customers want should be a top priority for any sports entity. By gathering data on their interests, we can better understand their expectations and exceed them. This helps maintain an engaging and attractive experience for the core consumers of our product. This process is ongoing, game after game.
- **Increase customer retention.**
 - Understanding customers' needs gives us more insight to build long-term relationships with them. Without data, there's no foundation for proving we're delivering a positive experience.
- **Know who your consumer is.**

- All sports entities have fans, but not all fans are the same. It's not enough to know the number of followers; we need to know who they are and how we can group them to offer a more personalized experience. Building fan profiles based on collected data is critical for shaping communication and sales strategies.

- **Set short- and medium-term objectives.**

- Without objectives, there's no direction. Objectives provide measurable goals that allow teams to assess performance at different stages and help guide adjustments when necessary. By tracking these goals, we can see where we are in the plan and make any needed changes to ensure continued positive results for the entity.

Main goal: turning data into revenue

Data is invaluable, but the key is to convert it into revenue. Collecting data for the sake of storing it doesn't drive business results. The goal is to continuously turn data into revenue for the sports entity.

To achieve this, it's essential to establish the following processes.

- **Set clear objectives and strategies.**

- These will guide and direct the business forward.
- Objectives can be both at the institutional and departmental levels.

- **Identify and gather the data needed to achieve these objectives.**

- There's a vast amount of information available from various sources. It's crucial to pinpoint the most relevant data for the development of the sports business and prioritize it. Not all data leads to positive results. A leader's ability to determine what's most important is key.

- **Translate data into actionable business strategies.**

- Data should be turned into a roadmap for the sports organization. Once the data is collected, we can decide how best to communicate it.

- **Organize and centralize the data for efficient management.**

- Structuring the information and ensuring it's accessible to the entire team is a crucial step. If only a small group within the organization has access to the data, it will be impossible to align the team towards the same objectives.

- **Analyze and present the data effectively.**

- Large amounts of information can be difficult to convey in a way that's easy for team members to understand. Tools should be used to simplify how information is visualized for the organization. Platforms like Power BI are highly useful in this regard.

- **Put the strategies into action.**

- Strategies are created to be executed.

- **Measure and repeat the process.**

- Measuring outcomes is critical to achieving objectives and refining strategies. Regular evaluation helps guide corrective actions when necessary.

CRM – What does it mean?

CRM stands for customer relationship management. It refers to the use of technology and processes to identify and manage customer data effectively.

The purpose of CRM is to streamline processes and improve customer relationships, which applies to any sports organization regardless of size. Effectively managing customer relationships is crucial to avoid failures in sales and to provide data for future business decisions.

The benefits and potential outcomes of implementing a CRM system include:

- **Unified customer profiles.**
 - Having standardized profiles ensures a shared understanding of partners and fans.
 - This applies to both companies and individuals, although the information collected will vary depending on the profile and their interactions.

- **Automation of processes.**
 - By using standardized tools, processes can be automated, freeing up time for employees to focus on creating new business opportunities.

- **Data collection.**
 - Gather data from all sales processes so that the organization can analyze and improve over time. Understanding what's happening allows the organization to take actions that change the direction of the business. The data collected in this process could include:

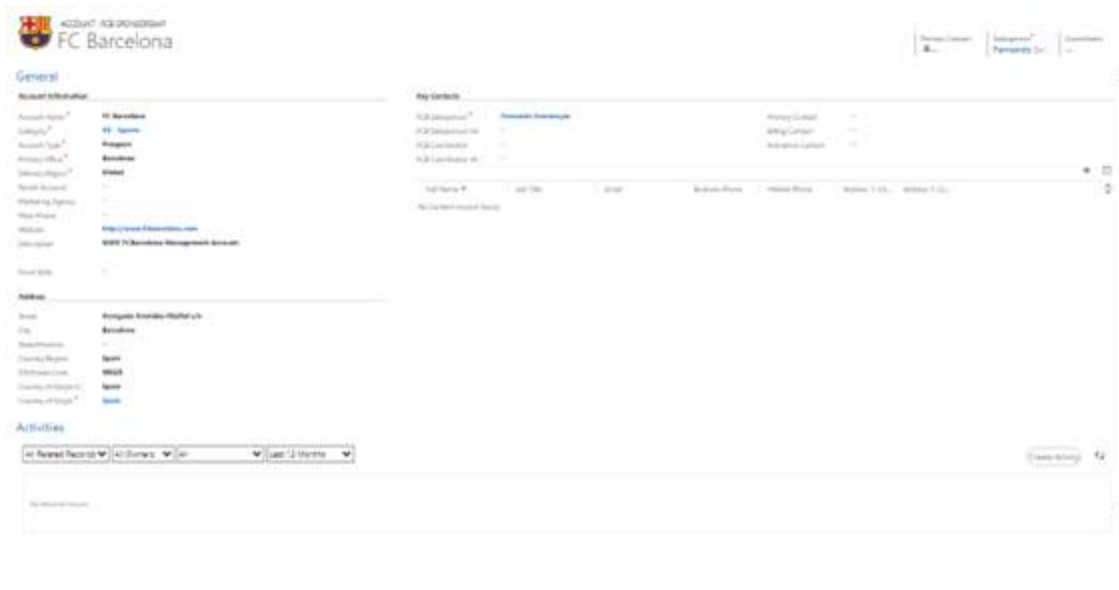
- the number of companies contacted, and deals made per season;
- reasons why potential sponsorships did not advance;
- which salespeople perform better and where improvements can be made.

● **Informed decision-making.**

- With established processes and data, sports organizations gain real-time insights that lead to better decisions, avoiding reliance on gut feelings.

Below is an example of a standardized brand profile on the club’s internal platform.

Figure 4. KORE x FCB CRM – FC Barcelona Practical Example



Implementing a successful CRM takes time, and following the process without skipping steps is important. It's essential to identify where the organization currently stands and where it wants to go. This way, the right steps are taken to reach that goal, but starting with a complex implementation can lead to employee frustration and long-term failure.

Examples: How does your customer data or CRM evolve over time?

- **Initial stage.**
 - A person buys a ticket for 20 euros.
 - A person buys a ticket for 30 euros.

- **Basic stage.**
 - A man named X buys a ticket for 20 euros.
 - A man named Y buys a ticket for 30 euros.

- **Intermediate stage.**
 - A man named X buys tickets for 60 euros and brings his family.
 - A man named Y buys tickets for 80 euros and brings clients.

- **Advanced stage.**

- A man named X buys tickets for 60 euros and brings his family. He also spends 50 euros on popcorn and drinks for them.
- A man named Y buys tickets for 80 euros and brings clients. He spends 200 euros on shirts for his clients.

These examples show how fan data evolves over time, allowing the organization to tailor products to their interests. While everyone may be a fan, their involvement with the organization might have different objectives.

Below are examples of the information you can collect about your fans.

- First and last name.
- Email address.
- Phone number.
- Membership number.
- Home address.
- Average spending per game (which can be used to segment customers based on their income).
- Game attendance.
- Purchases made on game days and non-game days.
- And much more.

The data collected will grow incrementally as proper implementation and measurement systems are applied.

Using data to adjust fan pricing

Over time, we can analyze fans' spending habits, as shown in the previous example. This lets us adjust prices based on a fan's historical spending, helping to maximize revenue.

In addition to analyzing internal fan data to optimize pricing, we can also look at the external market. This is referred to as the secondary market in ticketing. It includes tickets sold for sports events through sources other than the primary seller (such as the sports organization, competition, or ticketing rights holder). By studying resale prices and comparing them with the organization's sale price, we can understand the difference and whether our price is too high or low.

Combining fan spending history with resale data from third-party platforms helps set more accurate prices and increase profitability.

Figure 5. FCB Internal Practical Exercise

The image shows a ticketing interface for a football stadium. On the left, there are two seating charts: a top-down view with red and blue sections, and a bottom-up view with green sections. The top-down view is labeled 'LATERAL' and 'TRIBUNA'. The bottom-up view is labeled 'LATERAL' and 'GRANDE'. On the right, there is a 'TICKETS' section with a list of options:

Ticket Type	Price
1st Grandstand	169 €
2nd Grandstand	159 €
1st Side	149 €
2nd Side	139 €
1st Corner	84 €

Below this, there is a section for '119 anuncios' (advertisements) and a list of specific ticket options:

Section	Row	Price	Notes
Sección Lateral	Fila Low	81 €	por cada una
Sección Lateral	Fila Grad2	94 €	por cada una
Sección Lateral	Fila LEVL1	177 €	por cada una
Sección Lateral	Fila TIER1	177 €	por cada una

Source: FCB Internal Practical Exercise

In the example, the resale value of the ticket on the secondary market is 28 euros higher. This shows the gap between our original price and the market's valuation. With this data and what we know about our fans, we gain clarity on how to set pricing.

Factors like sporting events can greatly influence interest, supply, and demand. However, by keeping a historical record of fans and their contexts, we can be prepared for similar future situations, adjust prices accordingly, and ensure profitability.

A common approach in event pricing is "dynamic pricing," where prices fluctuate based on supply and demand in real-time. For instance, when demand is high, prices rise to maximize revenue, and when interest is low, prices drop to boost sales. This strategy requires constant data analysis and swift execution.

To sum up, data plays a crucial role in the business operations of any sports organization. The key is knowing where to start and identifying the right data to build a more profitable future. We've highlighted important points and examples, but each sports organization has its own unique circumstances and challenges.

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Unit 1.4 The role of business intelligence in team strategy.

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Creating a strategic plan.

Developing a clear strategy is increasingly vital in today's business world. That's why creating a strategic plan is essential for reaching your objectives.

A strategic plan can be defined as a document that outlines a company's strategic decisions over a period of 3 to 5 years. It details the actions the company will take during this period, which will vary based on the company's sector and surrounding factors (Equipo Ekon, 2022, <https://shorturl.at/dmrvI>).

The steps involved in creating a strategic plan are:

- **Analysis:** this is the phase where the company's current situation is assessed, which involves two key aspects:
 - **Internal analysis:** this involves summarizing all internal factors affecting the company. A detailed study of the company's business activities is conducted, examining key characteristics, resources, needs, and its unique aspects. The objective at this stage is to understand the company's current situation.

- **External analysis:** as in the previous step, all external factors affecting the company are analyzed. In this case, a thorough study of all related aspects must be conducted. This section should take into account factors like macroeconomics, microeconomics, and any possible legislation that could impact business activity. The purpose of this step is to determine the company's current position in the market.

● **Definition and design:** after analyzing everything that affects the company internally and externally, we proceed to the next two steps.

- **Defining objectives:** in this section, we establish the objectives to be achieved in the strategic plan by analyzing the company's sector to identify which opportunities are worth pursuing.
- **Strategy design:** once the company's objectives are defined, we design a strategy to achieve them. This strategy will act as a roadmap toward accomplishing the final goals.

● **Implementation and evaluation:** with all previous steps completed, we begin the journey that will last the next 3 to 5 years. The final two steps are crucial in this phase.

- **Implementation:** we need to communicate the plan to all departments, explaining how it will impact their roles. It's important to recognize that every department and employee will be affected by this implementation, as each plays a role in achieving the objectives, whether at a tactical or operational level.
- **Evaluation, review, and correction:** the final step involves continually assessing if everything is progressing as planned. During this phase, adjustments will likely be needed, given that internal and external factors can influence the plan over its long-term duration. For instance, one objective might have been to allocate 5% of the club's revenue toward employee training. Two years into the strategic plan, the national government passes a law mandating that this percentage should be 7.5%, requiring the club to revise this goal and apply the 2.5% increase.

Business intelligence at FC Barcelona

FC Barcelona's Business Intelligence (BI) team operates within the Corporate Department. This department reports directly to the board's treasurer and currently includes the following departments.

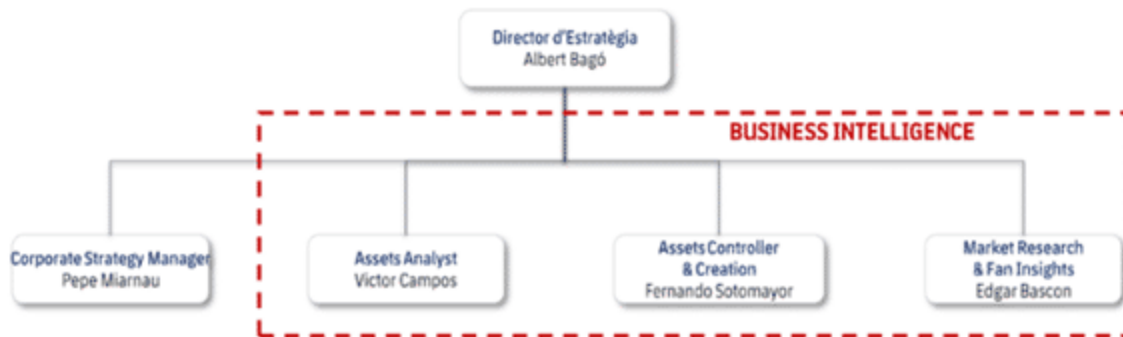
Figure 6. Departments



Source: Original work

The BI team is part of the Strategy department, which consists of two sections: Corporate Strategy and Business Intelligence. The organizational structure of this section is as follows.

Figure 7. FC Barcelona organizational chart



Source: Original work

Business intelligence's role in supporting team strategy

The BI team's main objective is to address various needs across the Club, not just within the Corporate Department.

The BI team operates under two primary circumstances.

- **Identifying opportunities:** the BI team actively identifies opportunities and shares them with other departments to assess their feasibility.

- **Addressing needs:** here, the team receives requests from other departments with specific needs that must be addressed. This second approach is more reactive.

Although these processes are initiated differently, both follow the same development phases.

- **Initial phase:** the first step involves establishing initial contact to understand the need or present a new opportunity to the other team.
- **Analysis:** once the need or opportunity is identified, all related factors are analyzed to define the BI team's role.
- **Development and implementation:** after completing the initial phases, the team focuses on how to meet the identified need and implement the solution.

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Unit 1.5 Internal BI clients

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The following examples illustrate real situations where the FC Barcelona BI team has provided support and continues to do so.

Internal client (department)	Main function of the department	BI involvement
Business Development	Selling sponsorship packages.	Defining commercial strategy, benchmarking categories in the strategy, creating a sponsorship HUB.
Partnership Activation	Activating sponsorship agreements.	Benchmarking industry best practices, recommending tools to better monitor existing sponsors.
Digital Team	Creating and publishing digital content.	Optimizing inventory, tracking digital assets over time, analyzing

		success stories from other clubs.
Hospitality & Events	Selling hospitality packages and stadium experiences.	Identifying new exploitation opportunities, benchmarking other venues' approaches.
Barça Identity	Defining the Barça brand and leading the Club's marketing campaigns.	Monitoring key brand health KPIs for both Barça and its main competitors.
Social Department	Managing the Club's relationship with its members and the services and benefits they receive.	Conducting market research, including the observatory, which offers an in-depth evaluation of members' views on Club management and their concerns.
Facilities Business	Commercial exploitation of the Club's facilities (ticketing).	Evaluating various business areas as rated by clients, identifying drivers and barriers, new business opportunities, and developing buyer personas.

Source: Original work

CONTINUE

Activities

self-assessment

BI systems offer the chance to:

- Track campaigns in real-time
- Assess each effort's performance
- Plan future campaigns
- Provide solutions for issues that arise in specific campaigns

SUBMIT

In sports, big data refers to...

Type your answer here

SUBMIT

CRM stands for:

Type your answer here

SUBMIT

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