

SDGs and Sports: Proposal for a Digital Tool with Sustainability Indicators for Social-sports Clubs

Victoria Jaquelina Ojeda, estudiante¹, y Karen Beatriz Villalba, Esp. Ing. en Sistemas de información^{1,2,3}

¹Departamento de Ingeniería en Sistemas de Información Facultad Regional Delta de la Universidad Tecnológica Nacional, Argentina, ²Cátedra Abierta Latinoamericana Matilda y las Mujeres en la Ingeniería, ³Red Latinoamericana de los ODS, vickyojeda95@gmail.com, kvillalba@frd.utn.edu.ar

Abstract— *Presentation of student work developed using Design Thinking, Canvas Model and Kanban methodologies at BOOTCAMP LACCEI 2024 selected by jury for dissemination: Non-validated proposal for the development of a website using HTML, CSS, JavaScript, and Python for the visualization of a Dashboard with easily visible and identifiable KPIs (Key Performance Indicators), focused on the sustainability analysis of management processes in socio-sports organizations and the provision of after-sales services. Based on the premise that consumers are increasingly aware of the positive impact of working towards the SDGs (Sustainable Development Goals), all organizations require a sustainability analysis. Inadequate indicators can reflect poor internal communication, a hostile work environment, and even operational inefficiency, which negatively impacts internal functioning and generates discontent among those who interact with the institution. Socio-sports organizations have recognized that their long-term prosperity requires a genuine commitment to society and the environment. Therefore, entities that adopt sustainable practices must demonstrate this to be more competitive, positively impact the community, and strengthen their influence in the region.*

Keywords— *Sustainability, Key Performance Indicators (KPI), Socio-sports organization, Sustainable Development Goals (SDG), Operational efficiency*

I. INTRODUCTION

The trend among consumers to acquire products and services that consider social and environmental criteria also applies to the leisure and sports sector. Companies are aware of these demands from their clients and seek this approach when developing their activities [1].

The sports and leisure industry is recognizing the importance of including a sustainability approach in all its processes. This shift is driven partly by consumer demands but also by the significant business opportunities that arise from integrating corporate sustainability and contributing to the SDGs into their strategies [1].

Through a sustainable commitment, opportunities arise to generate benefits related to new corporate sponsorships, new institutional relationships, and the potential increase in membership, all of which ultimately support the achievement

of strategic objectives related to their social and sports activities within the community.

II. SDGs & SPORTS.

This work originates from the experiences gathered during a University Extension Project funded by a grant from the National Technological University, Delta Regional Faculty in Argentina. The project involved developing a tool to analyze the sustainability of management processes within a non-profit social and sports organization that expressed great interest in obtaining an institutional sustainability diagnosis. A situational survey was conducted to provide a quantitative assessment of the organization's sustainability level as a starting point, followed by the identification of opportunities for implementing improvements aimed at achieving sustainable objectives. The enthusiasm of the Board of Directors and those consulted was evident, highlighting their need to demonstrate commitment to the environment and the community, their strong desire to position themselves and make a regional impact on society, and their intention to improve relationships between collaborators and/or members.

Later, as a result of the LACCEI 2024 Bootcamp, the idea to develop a website was defined. This website would feature a dashboard with easily visible and identifiable indicators on the sustainability analysis of management processes in social and sports organizations. It would also offer after-sales services, including additional data surveys, training, comparisons with other institutions, professional development and female leadership, as well as advice on sustainability and energy efficiency.

A. Sports:

According to data from the Inter-American Development Bank (IDB), almost 6 out of 10 Latin Americans consider their national sport to be a defining characteristic of their country and something they are most proud of. Football (soccer), in particular, brings millions of Ibero-Americans together every day, both in private playing fields and public spectator spaces on both sides of the Atlantic [2].

Digital Object Identifier: (only for full papers, inserted by LEIRD).

ISSN, ISBN: (to be inserted by LEIRD).

DO NOT REMOVE

The United Nations (UN) has defined sport in the context of development and peace as all forms of physical activity that contribute to physical well-being, mental well-being, and social interaction, including games, recreation, organized sports, or competitions, as well as indigenous games and sports [3].

Sport is a universal language that can unite people, regardless of their background, religious beliefs, or economic situation [3].

B. SDGs:

In the framework of the Declaration of the 2030 Agenda for Sustainable Development, approved by the United Nations General Assembly in October 2015, the role of sport in social progress is clearly recognized: "Sport is also an important enabler of sustainable development. We recognize the growing contribution of sport to the realization of development and peace by promoting tolerance and respect, and that it also supports the empowerment of women and young people, individuals, and communities, as well as health, education, and social inclusion objectives" [4].

C. Data in Argentina:

In Argentina, there are several initiatives related to the sustainability of social and sports entities. However, to provide an idea of the range of possibilities this project may target, we will provide data on the scale of the sports sector in this country.

The National Registry of Clubs and Sports Entities (RENACED) was initiated by the Ministry of Tourism and Sports of Argentina with two main objectives: first, to register as many clubs as possible throughout Argentina, and second, to collect and compile systematic information about these clubs to create an initial characterization of this universe of institutions based on a set of relevant dimensions such as administrative and organizational aspects, infrastructure, sources of income and expenses, sports and community activities, gender policies, among others [5].

The latest report on the number of institutions registered in the "National Register of Clubs and Sports Entities" for the year 2021 reveals that, at the provincial level in Buenos Aires, there are a total of 4,084 identified entities. At the regional level in the Pampas region, which includes the provinces of Buenos Aires, Córdoba, Entre Ríos, La Pampa, and Santa Fe, there are a total of 7,028 identified entities. Nationally, 11,870 entities have been identified.

There is an initiative by the Argentine Sports Confederation to promote environmental care through its Federal Sustainable Sports Program (PROFEDES). [6] It has strategic alliances with other sustainability entities such as Fundación Expoterra and Click Solar, as well as with the National Government to contribute to the development of sustainable sports in Argentina. It includes 457 affiliated entities among associations, federations, confederations, and clubs across various disciplines.

Another organization interested in sustainability is the Argentine Olympic Committee (COA) through its Sustainability in Sports Commission, which is responsible for implementing a national sports environmental policy that includes promoting good environmental practices and undertaking sustainable actions for the protection of the planet, in line with the Olympic movement of the International Olympic Committee (IOC). The COA has 65 affiliated federations across the country in various disciplines. [7]

Therefore, the range of disciplines and entities interested in sustainability issues is vast and has the potential to reach across the entire country. Future work can address new technologies to automate data collection processes, allowing more entities to be covered without compromising the human resources involved in the project.

III. SUSTAINABILITY INDICATORS AND ESG CRITERIA

For the development of the indicators to be displayed on the website, an ESG-based criterion will be used, which will be described below to provide an understanding of the choices made for the analysis.

A. ESG Criteria

A set of standards for the operation of an institution that socially responsible investors use to evaluate potential investments. The Environmental (E) criterion assesses the degree of consideration an organization shows toward the natural environment; the Social (S) criterion examines how interactions with collaborators, suppliers, partners, and the community in which it operates are managed; and the Governance (G) criterion addresses the organization's leadership model, employee compensation, audits, internal controls, and stakeholder rights. From this perspective, areas of improvement and strength in the institution can be identified, and an impartial analysis will provide a starting point to take appropriate measures, setting the guidelines that will chart the course toward sustainability, which is unique for each organization.

B. Sustainability Indicators

In this project, the indicators will be categorized from five perspectives:

-Eco-efficient practices: Carbon emission reduction, waste management, energy efficiency, use of sustainable materials, water conservation, community awareness campaigns.

-Perception of quality and infrastructure maintenance: Condition of buildings, quality of services, response time to problems, technological updates, regulatory compliance.

-Perception of working environment conditions: Safety and health, job satisfaction, physical conditions of the workspace, development opportunities, work-life balance.

-Inclusion and gender perspective: Accessibility, assessment of inclusive climate, representation in leadership positions, prevention of sexual harassment and discrimination, inclusion policies.

IV. METHODOLOGY

The development of the website with sustainability indicators will be approached using a methodology that integrates Design Thinking, the Canvas model, and the Kanban methodology. The following outlines each of the methodological phases employed:

A. Design Thinking[8]:

It will be used to guide the design process from a user-centered perspective. The methodology consists of several stages:

1)Empathize: To deeply understand the needs and problems of the end-users.

- Interviews and surveys: Opinions and perceptions of relevant stakeholders, including internal collaborators, clients, and other key actors, were collected and analyzed using Likert scale questions and open-ended questions to gather improvement suggestions.

- Direct observation: Detailed analysis of the current situation through direct observation of activities, processes, and conditions within the institution under study.

2) Define: Clearly identify the specific challenges the website should address.

- Brainstorming: Conduct a meeting to ask questions, write down ideas on how to present the indicators, design the dashboard, types of graphs, filters, customization options, and interactive elements. Do not judge or filter ideas at this stage; the goal is to generate as many ideas as possible.

- Stakeholder analysis: Identify all stakeholders who may affect or be affected by the project.

3) Ideate: Generate various solutions and approaches for visualizing sustainability indicators.

- SCAMPER: Substitute, Combine, Adapt, Modify, Put to another use, Eliminate, and Reorganize. Specific sustainability indicators are identified and defined within the institution under study. These indicators are carefully selected

to measure the environmental, social, and economic performance of the institution in relation to its practices and activities.

4) Prototype: Allows the development of preliminary versions of the dashboard.

- Rapid prototyping: Website interface according to requirements.

- Flowcharts: Diagram to visualize the functioning of the service.

5) Test: Facilitates obtaining direct feedback from users to refine and adjust the design according to their needs and expectations.

- Usability tests: To verify the functionality of the website and ensure it is accessible to the client.

- Post-test interviews: Information gathering through Likert scale surveys.

B. Canvas Model[9]:

It will be applied in parallel with the Design Thinking approach to comprehensively define and provide a clear vision of the key elements of the project as indicated below:

1) Value Proposition: Dashboard with easily visible and identifiable indicators on the sustainability analysis of processes. After-sales services. Personalized attention. Increase the client's prestige.

2) Customer Segments: Social and sports clubs, large gyms, complexes with rental fields, and municipal sports fields.

3) Channels: Website, social media, and customer service.

4) Customer Relationships: Accessibility, after-sales service, service quality, and feedback.

5) Revenue Streams: Fee for the dashboard with sustainability process analysis. Consulting service fees. After-sales services.

6) Key Resources: Website, data server, and human resources.

7) Key Activities: Platform development and support. Planning and design. Data collection and management. After-sales service.

8) Key Partnerships: Local governments. Data server provider. Consulting professionals. Environmental NGOs. Entities.

9) Cost Structure: Operational, labor, technology, and systems.

C. Kanban[10]:

It will be used to manage the workflow and ensure efficiency in the project development. It allows the visualization of tasks and their progress throughout the project through a Kanban board where tasks are organized into columns representing different stages of the process, from planning to completion. These stages will be divided into "Pending," "In Progress," and "Completed."

The combination of Design Thinking, the Canvas model, and Kanban will provide a solid foundation for developing the website, ensuring that the final product is functional, intuitive, and aligned with the project objectives, while also ensuring efficient management of the development process.

V. RESULTS

The development of the website with sustainability indicators will be approached using a methodology that integrates Design Thinking, the Canvas Model, and Flowcharts.

Due to the fact that this article is based on the experience of Bootcamp LACCEI 2024, and the development of the website was not completed, it does not represent a validated functional prototype.

The Canvas Model has been developed to effectively structure the project. It allowed for the definition and organization of the project's essential elements, providing a comprehensive view that facilitates planning and decision-making for the development of the website, as illustrated in Fig.1.



Fig. 1: Business Model Canvas from SDGs and Sports
Source: Own elaboration

A flowchart was also created to visualize the flow of the service provided between the involved actors, as shown in Fig. 2.

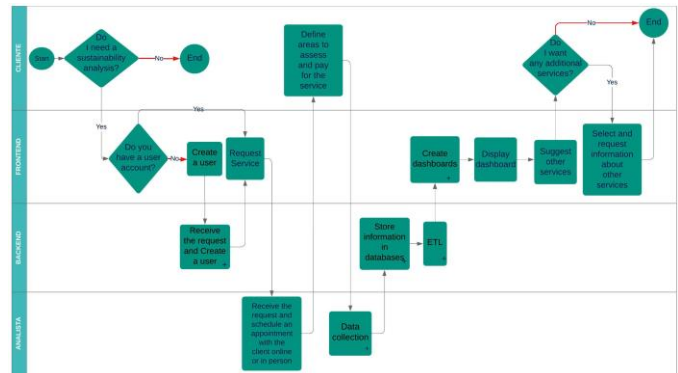


Fig. 2: Flowchart from SDGs and Sports
Source: Own elaboration

Likert Scale Questions for Service Client Feedback (Socio-Sports Organizations)

- Are you satisfied with our customer service?
- Did our services meet your expectations?
- Would you recommend our brand to someone you know?
- Is our website easy to use?
- Would you consider using our services again?
- Do you agree that our prices are in line with the quality offered?
- Do you agree that our solutions provide exactly what you need?

Likert Scale Questions for Satisfaction and Perception Surveys

Then, a table was created in accordance with Fig. 3, listing the possible topics for Likert scale questions to stakeholders to gauge their level of satisfaction and perceptions.

	LEADERS	INTERNAL COLLABORATORS	PARTNERS	VISITORS
TOPICS	Communication Collaboration Professional development Leadership Resource management Social impact Organizational culture Strategies Gender perspective Environmental awareness	Communication Work environment Professional development Compensation and benefits Safety Eco-efficient practices in daily work Work recognition Inclusion Gender perspective Collaboration Health and well-being Environmental awareness	Communication Facility quality Facility maintenance Organization Activities Customer service Inclusion Safety Environmental awareness	Facility quality Customer service Inclusion Safety

Fig. 3: Table with topics for Likert scale questions for the stakeholders.
Source: Own elaboration

Scale:

1 - Strongly Disagree

2 - Disagree

3 - Neither Agree nor Disagree

4 - Agree

5 - Strongly Agree

Open-ended questions for perception surveys

Additionally, Fig. 4 illustrates another table with the open-ended questions that will be asked to each stakeholder.

	LEADERS	INTERNAL COLLABORATORS	PARTNERS	VISITORS
TOPICS	What concerns do you have in your role within the organization?	What do you need to improve your daily tasks?	What do you enjoy most about working in the organization? What do you enjoy least about working in the organization?	What do you enjoy most about working in the organization? What do you enjoy least about working in the organization?

Fig. 4: Table with topics for open-ended questions for the stakeholders.

Source: Own elaboration

Requirements:

- Identify the client
- Have a payment system
- Identify the socio-sports organization/entity/company
- Display a dashboard with sustainability indicators
- Have a contact/communication method
- Offer after-sales service
- Manage the customer database

Interface/edge:

Below are the mockups for the website with the intended color scheme, along with a brief explanation of how the user interaction with each interface would be:

Upon entering the website, the Home interface shown in Fig. 5 will display the name, logo, and services offered by the site; the option to register and request services; and the option to log in if you already have an account. Until you log in, you will not be able to view the after-sales services or the dashboard, and will only be able to access the Contact, Register, or Login sections.

If the user is not registered on the website, selecting the registration option will open the registration interface as shown in Fig. 6, where they will need to fill in their details and select whether they are an individual or a company.

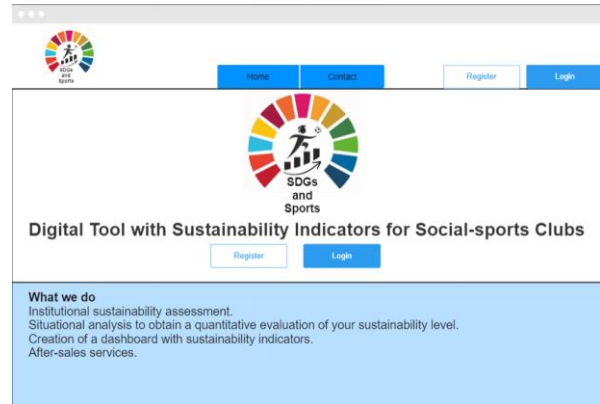


Fig. 5: Home of the SDGs and Sports website.

Source: Own elaboration

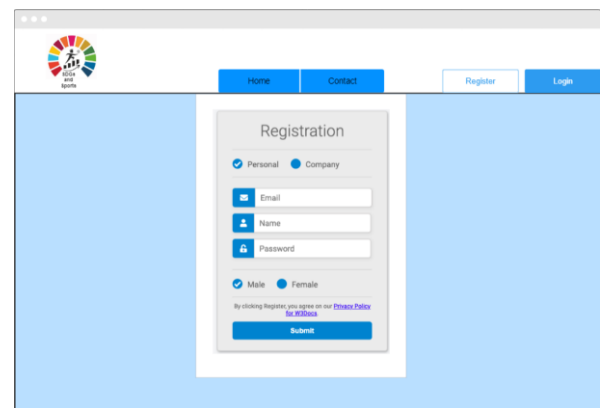


Fig. 6: Registration for the SDGs and Sports website.

Source: Own elaboration

If the user is registered on the website, selecting the Login option will open the login interface as shown in Fig. 7, where they will need to enter their username and password. If they have forgotten their password, they can select the 'Forgot password?' option to recover it. If they are not registered yet, selecting the 'Create account' option will take them to the Registration interface so they can register and then log in with their username.

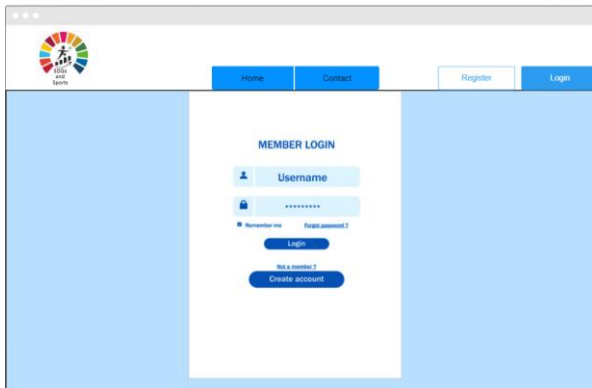


Fig. 7: Login for the SDGs and Sports website.

Source: Own elaboration

To create this dashboard, Design Thinking will be used to meet the client's needs and expectations. Therefore, this dashboard will be different for each client, as it will depend on the type of organization to be assessed.

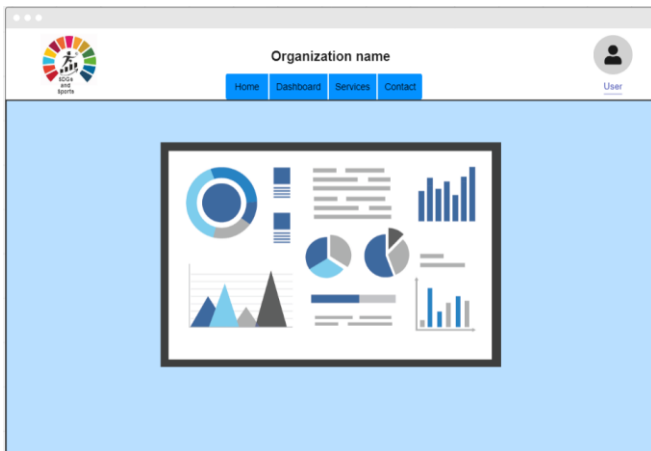


Fig. 8: Dashboard of the SDGs and Sports website.

Source: Own elaboration

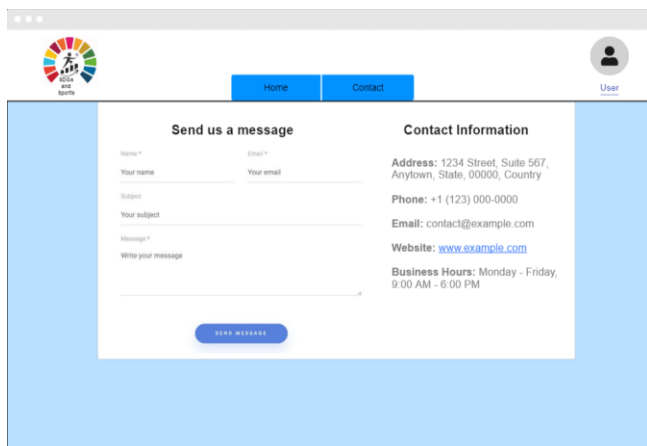


Fig. 9: Contact of the SDGs and Sports website.

Source: Own elaboration

If the user has already purchased the sustainability indicators dashboard service, the 'Services' option will appear in the website menu. Selecting the 'Services' option will display the interface with the available services and their prices as shown in Fig. 10. There, the user can search for the services they are interested in and, by selecting 'Request information,' will request details to be able to hire the service.

After-sales services

- Sustainability and Energy Efficiency: Research the feasibility of implementing measures to improve energy efficiency at the club's facilities, such as installing solar panels, new energy-efficient LED lighting systems, and energy management programs.

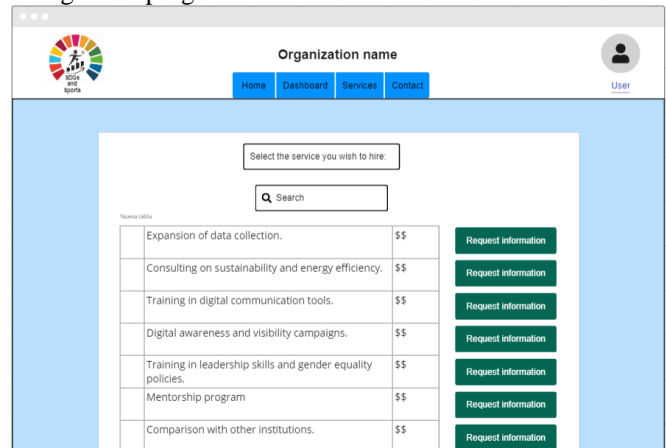


Fig. 10: After-sales services of the SDGs and Sports website.

Source: Own elaboration

- Professional Development and Female Leadership: Research specific strategies to promote professional development and female leadership within the club, such as mentoring programs, leadership skills training, and gender equality policies in staff selection and promotion.

- Internal Communication and Employee Participation: Explore ways to improve internal communication and encourage employee participation in decision-making, such as implementing online collaboration tools, creating interdisciplinary workgroups, and holding regular feedback meetings.

- User Experience Optimization: Refine and enhance data collection tools based on user feedback and experience, ensuring greater effectiveness and satisfaction in the information gathering process.

- Improvement of Data Collection Instruments: Review and adjust question forms to obtain more accurate and detailed information on users' opinions and needs, allowing for a better understanding of key aspects related to sustainability.

VI CONCLUSION

- Expansion of Data Surveys: Conduct new surveys with a larger amount of information and a more representative sample, providing a more comprehensive and detailed view of the current situation and areas for improvement in terms of sustainability.

- Comparison with Similar Institutions: Conduct comparative studies with similar institutions to identify best practices, trends, and improvement opportunities in the field of sustainability, allowing the club to position itself more effectively in its sector.

- Digital Awareness and Visibility Campaigns: Design and execute digital campaigns to increase awareness of sustainability and highlight the club's initiatives and achievements in this area, involving members, employees, and the community at large.

- Promotion of Strengths in Sustainability Management: Highlight the club's strengths in sustainability through digital campaigns and other media, showcasing achievements and commitments made.

- Sustainability Training: Offer sustainability training programs for club employees and/or members, aiming to promote greater awareness and action in key areas.

- Training in Digital Internal Communication Tools: Offer training programs for employees on the effective use of digital internal communication tools to improve collaboration, coordination, and efficiency in information management within the organization.

- Advisory on Digital Athlete Performance Tracking Tools: Provide specialized advice on selecting, implementing, and using digital tools for tracking athletes' performance, enabling the collection and analysis of relevant data to optimize performance and prevent injuries, thereby improving training quality and athletes' experience.

- Development of a Suggestion Collection Tool: Design and develop a digital tool dedicated exclusively to collecting suggestions from employees and club members, facilitating active participation and continuous feedback on sustainability, club operations, and user experience.

In the long term, the goal is to collect customer feedback to provide better service, encourage the use of more after-sales services through marketing strategies, expand the business to offer more sustainability and ecology solutions, such as selling environmentally friendly products to be used in these organizations, and incorporating automation tools with Artificial Intelligence and Machine Learning to manage the information necessary for surveys, reducing the impact on human resources.

Sustainability offers tangible benefits for all types of institutions, and social and sports clubs are no exception. From enhancing their image and reputation, reducing fixed costs, and improving regulatory compliance, to positively impacting their revenues; to showcasing their good practices that highlight the Sustainable Development Goals of the 2030 Agenda of the United Nations [6].

Through a commitment to sustainability, opportunities arise to generate benefits such as new corporate sponsorships, new institutional relationships, and increased membership, which ultimately support the achievement of strategic objectives related to their social and sports activities within the community.

REFERENCES

- [1] C. Sánchez, J. Molero, R. Carricondo, A. Cámara y M. Arroyo, Innovación para lograr la agenda 2030. Pacto Mundial de la ONU España, Deportes y ocio. ODS Año 7, Madrid, 2022. Acceso: Agosto 2, 2024.
- [2] Consejo Iberoamericano del Deporte, El deporte como herramienta para el desarrollo sostenible. Introducción conceptual y revisión de experiencias Parte 1. Iberoamérica y la agenda 2030, Montevideo, 2019. Acceso: Agosto 3, 2024.
- [3] Fondo de las Naciones Unidas para la Infancia, UNICEF (2003). "Deporte para el Desarrollo y la Paz", p. 3.
- [4] Consejo Iberoamericano del Deporte, El deporte como herramienta para el desarrollo sostenible. Perspectivas, Avances y Oportunidades, Parte 2. Iberoamérica y la agenda 2030, Montevideo, 2019. Acceso: Agosto 3, 2024.
- [5] IDEAS UNSAM. Relevamiento Nacional de Clubes y Entidades Deportivas (RENACED) Observatorio Social del Deporte Ministerio de Turismo y Deportes + Escuela. Buenos Aires, 2021.
- [6] Confederación Argentina de Deportes Programa Federal de Deporte Sostenible (PROFEDES). Confederación Argentina de Deportes, Octubre 20, 2023. [En línea]. Disponible: <https://cad.org.ar/profedes/>.
- [7] Comité Olímpico Argentino. Comisión Sostenibilidad en el Deporte. Octubre 20, 2023. [En línea]. Disponible: <https://www.coarg.org.ar/>.
- [8] R. Resano. (2024, September 01). Design Thinking [Online]. Available: <https://openaccess.uoc.edu/bitstream/10609/75946/4/Design%20Thinking.%20Tendencias%20en%20la%20teor%C3%ADa%20y%20la%20metodolog%C3%ADa%20del%20dise%C3%B1o%20M%C3%B3dulo%204%20design%20thinking.pdf>
- [9] Businessmap (2024, September 01). Enciclopedia Kanban: conceptos y términos [Online]. Available: <https://businessmap.io/es/recursos-de-kanban/primeros-pasos/enciclopedia-kanban#:~:text=El%20sistema%20Kanban&text=Fue%20un%20sistema%20de%20controlar,para%20la%20cadena%20de%20suministro>.
- [10] A. Osterwalder, Modelo de lienzo. Barcelona: Deusto SA Ediciones, 2011.