

DESIGNING SPORTS EQUIPMENT RENTAL APPLICATIONS AND BOOKING SPORTS FIELDS TO SUPPORT PUBLIC HEALTH AND SDG 3: GOOD HEALTH AND WELL BEING

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ABSTRACT

Sports participation plays a crucial role in promoting physical health and supporting Sustainable Development Goal 3 (Good Health and Well-Being). However, limited access to sports equipment and sports facilities often hinders community engagement in healthy activities. This study proposes the design of a sport equipment rental and sport field booking application as a digital solution to increase accessibility and convenience for the public. The application integrates features such as online booking of sports fields, rental of various sports equipment, payment gateway, and real-time availability tracking. By adopting user-friendly design principles, the platform aims to encourage active participation in sports while reducing barriers related to cost and accessibility. Furthermore, the system supports community health by fostering inclusivity and creating opportunities for individuals to engage in regular physical activity. The proposed application is expected to not only optimize resource utilization but also contribute to achieving SDG 3 by improving public health outcomes through increased participation in sports and physical exercise.

Keywords: Sports Participation, Physical Health, Sustainable Development Goals, SDG 3, Sport Equipment Rental, Sport Field Booking, Digital Health Solution, Accessibility, Community Engagement, Public Health, Active Lifestyle, Inclusivity, Resource Optimization

1. INTRODUCTION

Public health is one of the important aspects of sustainable development. However, limited access to sports facilities and supporting equipment is often an obstacle for people to exercise regularly. This condition can increase the risk of non-communicable diseases, decreased physical fitness, and reduced quality of life.

As a solution, the development of digital applications for sports equipment rental and sports field bookings can be an innovation that supports the community in accessing sports facilities more easily, affordably, and inclusively. The app not only facilitates physical activity but also encourages a healthy lifestyle, social interaction, and awareness of the importance of exercise.

This initiative is in line with the Sustainable Development Goals (SDGs), especially SDG 3: Good Health and Well-Being, which targets improving physical and mental health, preventing diseases, and promoting healthy lifestyles in the community.

Exercise is a form of planned and structured physical activity that involves repetitive body movements and is aimed at improving physical fitness (Aristotle, 2018; Nurhafifa, 2021). There are so many sports that can be played with the circle of friends that you have. However, sometimes the tools that must be used in some sports activities are not available. For example, even in hiking, golf, and even badminton need tools in sports activities. This can be an obstacle and prevent sports activities from occurring. Another problem is that people from various circles of friendship make reservations for sports fields (or studios) by visiting the desired sports venue directly and still have to use the manual method. This can be a problem if the place they are going to is full and they are not able to exercise in the end. In addition, sports field users cannot socialize or exchange information about the availability of fields, facilities, and prices offered.

Based on research conducted by Hariya Gusti Setia Pambudi (2021) in a case study entitled "Web-Based Outdoor Equipment Rental Information System (Case Study: Ex Adventure Solo)" it was concluded that the innovation of the tool rental information system is very easy for users. This is due to the availability of sports equipment that is sometimes not owned personally by everyone so that borrowing is needed in the process. However, often users feel confused about where, who, and how to make the loan or rental.

The next research conducted by Santoso and Michael Randicha Gunawan (2019) in a journal entitled "Design and Build a Web-Based Sports Field Booking System" resulted in 3 surveys conducted using questionnaires that respondents wanted innovation in renting sports fields online. In general, the field booking system still uses a manual method, namely users must go directly to the field rental place or contact by phone to check the empty field, while this booking by phone has obstacles in terms of inaccurate validation, therefore the field also does not carelessly accept orders by phone. An idea for designing an application for sports equipment rental and sports field booking called Equirent will be described and explained in this report. Equirent is a mobile application-based online platform that offers sports equipment rental services and sports field booking services simultaneously that can help users from transactions to the process of renting sports equipment and sports fields. Not only that, with this platform, it is hoped that it can provide real-time information media and communication strategies for users who want to rent sports equipment and sports fields without visiting the renter of goods or fields to just ask about the schedule

LITERATURE REVIEW

TECHNOLOGY IN SUPPORTING PUBLIC HEALTH

The use of digital technology has become one of the important strategies in supporting public health. According to WHO (2021), digital health solutions can improve access, efficiency, and effectiveness of health services. In the context of sports, digital applications can be a medium for health promotion through increased physical activity (Lee et al., 2019). Studies show that community involvement in exercise applications has a positive impact on active lifestyles and reduced risk of non-communicable diseases such as diabetes, hypertension, and obesity (Kari et al., 2020).

APP-BASED SPORTS FIELD BOOKING

Several previous studies have discussed the development of information systems for booking sports facilities. For example, research by Nugraha & Hidayat (2020) shows that an application-based field booking system can improve efficiency in schedule management and make it easier for people to access sports facilities. This ease of access is related to increasing public participation in organized sports activities.

In addition, schedule transparency, digital payments, and booking notification features have been proven to reduce field usage conflicts and increase user satisfaction (Putra et al., 2021).

RENTAL OF SPORTS EQUIPMENT AS AN ALTERNATIVE TO ACCESS FACILITIES

Limited ownership of sports equipment is often an obstacle for people to exercise. According to Pratama (2019), a sharing economy business model such as sports equipment rental can be an inclusive solution for people who cannot afford to buy equipment permanently. With an application-based rental system, users can access sports equipment as needed without spending a lot of money. It also supports the principle of sustainability because it optimizes the use of tools together (Ranjbari et al., 2021).

LINKAGE TO SDG 3: GOOD HEALTH AND WELL-BEING

The United Nations (2015) sets SDG 3 which focuses on improving public health. Target 3.4 emphasizes the reduction of non-communicable diseases through the prevention and promotion of mental and physical health. Sports equipment rental applications and field bookings are in line with this goal because: (a). Encourage community participation in regular sports; (b). Provide wider and more inclusive access to sports facilities; (c). Utilizing technology to strengthen the promotion of a healthy lifestyle.

A study by Biddle & Asare (2019) confirms that regular involvement in sports can improve people's quality of life, mental health, and productivity. Thus, this application is not only a digital innovation, but also a real strategy in supporting the achievement of the SDGs.

RESEARCH GAP

Although there has been research related to field booking applications or sports equipment rental systems separately, there has not been much research that integrates the two into one digital platform while emphasizing the contribution to public health and SDG 3. Therefore, this research is important to provide added value, both in terms of technology and its impact on public health.

2. METHOD

System Design : (a). Use Case Diagram: describes the interaction of users (user, admin, manager); (b). Activity Diagram: Field booking and tool rental flows; (c). Diagram Class: data structures for users, fields, tools, transactions; (d). ERD (Entity Relationship Diagram): a database for storing user data, field schedules, tools, transactions; (e). UI/UX Design: an easy-to-use and attractive prototype interface (wireframe & mockup);

Implementation : (a). Front-end programming (Android/iOS-based mobile app or web); (b). Back-end programming (API & database); (c). Payment gateway and notification integration;

Testing : (a). Black-box testing: ensure the function runs as needed; (b). User acceptance testing (UAT): direct testing with potential users to assess convenience and practicality;

Advanced Maintenance & Development : (a). Bug fixes, feature updates, and system development according to user needs; (b). Monitoring application performance through logs and feedback;

3. RESULTS AND DISCUSSION

WIRE FRAME DESIGN

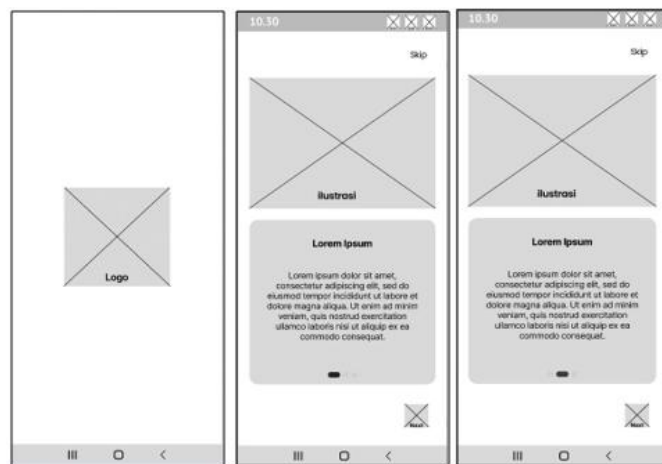


Figure 1. Wire Frame Design

PROTOTYPE

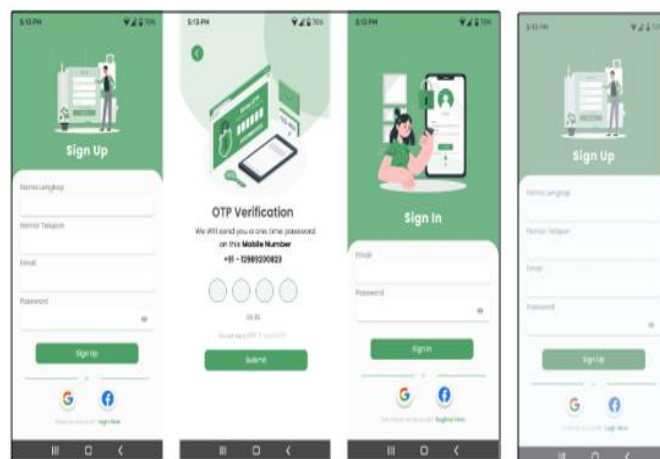


Figure 2. Sign in and Sign up Page

Sign Up page, users can fill in the required data and then it will display the verification page (OTP Verification) of the registered number. If successful, a pop-up notification that registration was successful will appear. Meanwhile, in Sign In, users can fill in the required data and if successful, a pop up notification will be displayed that the login is successful.

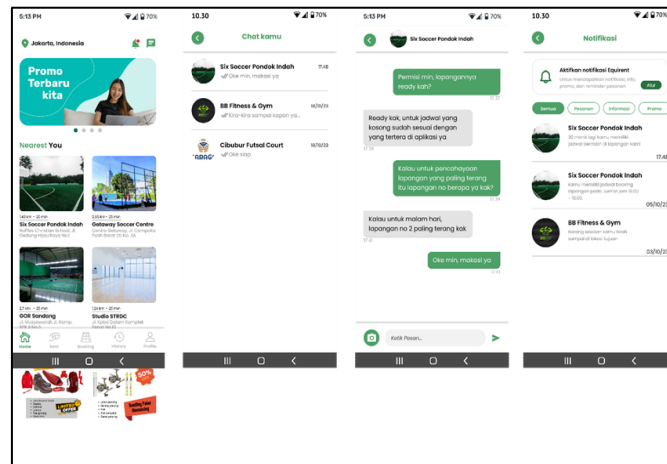


Figure 3. Home Page

On the Home Page page, there is a user's location, a chat feature used to communicate with the field, and a notification feature as a reminder in field bookings. Then there is a slideshow containing the latest promos from the application, sports venues that can be ordered according to the user's nearest location, and bundling packages so that users can order at a cheaper price

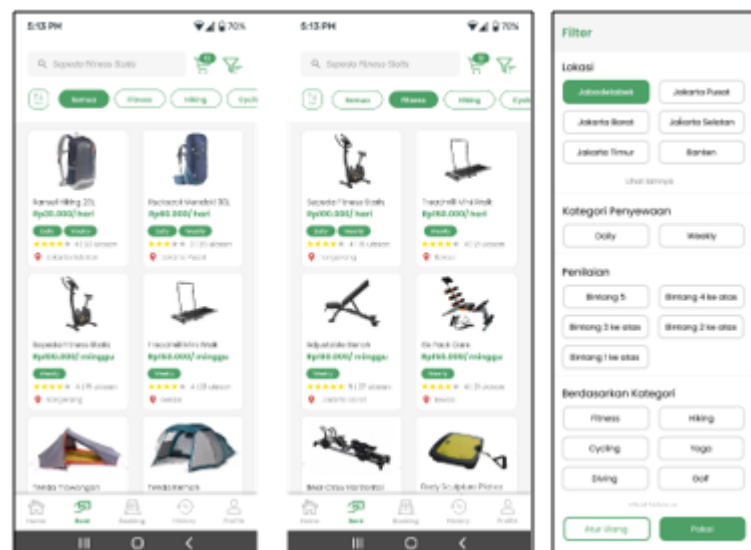


Figure 4. Rent Page

On the Rent Menu, there is a list that is displayed vertically scrolling related to items that can be rented (according to the category). At the top of the page there is a search bar so that users can easily search for the desired items and filters that users can use to sort the search according to their desires.

4. CONCLUSIONS

Conclusion : (a). The design of sports equipment rental applications and sports field bookings is a digital innovation that can make it easier for people to access sports facilities efficiently, transparently, and affordably; (b). This application supports the achievement of SDG 3: Good Health and Well-Being, as it can increase community participation in physical activity, reduce barriers to limited facilities, and encourage a healthy lifestyle; (c). The implementation of digital technology in the field of non-medical health (preventive through sports) has proven to be able to bridge the needs of the community with sports service providers; (d). With this application, it is hoped that an inclusive, sustainable sports ecosystem will be created, and will have a positive impact on the quality of life of the community;

Suggestion : (a). Advanced Feature Development – The app needs to be equipped with additional features such as sports recommendations according to the user's health needs, digital payment systems, and calendar integration for more flexible bookings; (b). Collaboration with Stakeholders – There is a need for cooperation with field managers,

sports communities, and local governments to expand service networks and ensure sustainability; (c). Security and System Reliability Aspects – The security of user data, schedule accuracy, and price clarity must be maintained to ensure that the application is reliable and reliable; (d). Socialization and Public Education – In order for the application to really be beneficial, people need to be encouraged to actively use the application through digital literacy campaigns and the promotion of a healthy lifestyle; (e). Continuous Evaluation and Development – Applications must be continuously evaluated based on user feedback to adapt services to the needs of an ever-evolving society;

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