Development of a Web-Based Event Management System for Optimizing Volleyball Tournaments in Malaysia

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Abstract—**Emtoz Volleyball, a sports organization in Malaysia, faces challenges in manually managing and organizing volleyball events. To address this, we developed the Sport Local Event Management System (SLEMS), a centralized platform for event creation, registration, and scheduling. The system was built using the Iterative and Incremental Development Model, allowing for phased enhancements and continuous feedback. To evaluate SLEMS, we conducted User Acceptance Testing (UAT) with 30 respondents, including organizers, supervisors, and participants, through a structured questionnaire. The results showed high user satisfaction, with 46.7% "Very Satisfied" and 33.3% "Satisfied", confirming that the system meets all functional requirements. Our findings demonstrate that SLEMS effectively streamlines event administration, reducing manual efforts while improving efficiency. This system provides a scalable solution for sports organizations seeking to optimize event management processes.**

Keywords—Volleyball Event Management; Sports Management System; User Acceptance Test (UAT), Event Automation.

I. Introduction

In Malaysia's thriving sports ecosystem, volleyball has gained significant popularity as a unifying force that strengthens community bonds while promoting athletic excellence. However, organizing local volleyball tournaments continues to face substantial challenges, including disjointed management systems, cumbersome manual registration processes, and inefficient scheduling methods. To overcome these obstacles, we present the Sport Local Event Management System (SLEMS), an innovative web-based platform specifically engineered to optimize volleyball event coordination and maximize stakeholder engagement.

Developed using robust MySQL database architecture and PHP programming [1][2], SLEMS delivers a comprehensive, role-optimized solution featuring three distinct interfaces:

1. Event Organizers - Equipped with powerful tools for event creation, promotion, and real-time management

2. Team Managers - Streamlined functionality for roster management, player registration, and schedule coordination

3. Spectators and Participants - Intuitive access to event discovery and registration

By transforming traditional event workflows into a digital ecosystem, SLEMS effectively eliminates administrative inefficiencies, minimizes paperwork, and enhances overall participation enabling Malaysia's vibrant volleyball community to concentrate on athletic performance rather than logistical challenges [3].

II. Project Background

Volleyball has experienced significant growth in Malaysia, with increasing participation at both competitive and recreational levels. However, many local sports organizations, including Emtoz Volleyball Club, still rely on manual processes for event management leading to inefficiencies, administrative bottlenecks, and limited scalability.

Currently, Emtoz faces three core challenges:

1. Time-Consuming Operations – Manual registrations, paper-based scheduling, and in-person coordination demand excessive staff effort.

2. Error-Prone Processes – Human mistakes in data entry, scheduling conflicts, and miscommunication affect event quality.

3. Limited Accessibility – Without a digital platform, player registration and event updates remain inconvenient for participants.

To modernize its operations, Emtoz requires an integrated, web-based event management system. SLEMS is designed to:

- Automate registrations & scheduling – Reducing paperwork and processing time.
- Minimize errors – Ensuring accurate team allocations, match fixtures, and results tracking.
- Enhance engagement – Providing real-time updates and mobile-friendly access for players, managers, and fans.

By implementing SLEMS, Emtoz Volleyball Club will not only streamline its operations but also expand its reach, attract more participants, and strengthen Malaysia's volleyball ecosystem. This project aligns with national efforts to digitize sports management and foster greater community participation in athletics [4].

III. PROBLEM STATEMENT

The current event management framework of Emtoz Volleyball Club suffers from critical operational inefficiencies that hinder its growth and community impact. These systemic challenges manifest in the following key areas:

A. Manual Processes

Traditional event management methods employed by Emtoz Volleyball Club heavily rely on manual processes for organizing, promoting, and handling registration for events. The manual nature of these processes introduces inefficiencies, delays, and the potential for errors in event management. Tasks such as creating event schedules, managing participant registrations, and coordinating various aspects of events are susceptible to human errors and time-consuming manual efforts.

B. Limited Accessibility

Participants interested in Emtoz Volleyball Club events encounter challenges in accessing comprehensive event information. Fragmented sources of information or the absence of a centralized platform result in participants struggling to find accurate and up-to-date details about schedules, event availability, and specific event information. This limited accessibility hampers the ability of potential participants to make informed decisions about their participation in the club's events.

C. Organizer Challenges

Event organizers within Emtoz Volleyball Club face difficulties in managing and promoting events effectively. Scheduling logistics, handling participant registrations, and coordinating various aspects of events become complex and time-consuming due to manual processes. The lack of automated tools and streamlined processes hinders the organizers' ability to efficiently plan and execute successful volleyball events.

D. Lack of Centralized Information

The absence of a centralized online platform results in sports enthusiasts struggling to find a comprehensive and reliable source for local event information. Fragmentation and inconsistency in details about tournaments and events create confusion among the sports community, impacting their ability to stay updated on relevant information. Without a centralized hub, enthusiasts may miss out on exciting events, leading to a disconnect between potential participants and the events organized by Emtoz Volleyball Club.

IV. RELATED WORK

The development of the SLEMS was informed by a thorough analysis of existing platforms, particularly Torneopal [5] and Tournify [6], each offering valuable insights through their distinct approaches. Torneopal's soccer-oriented platform demonstrates effective large-scale tournament management with features like real-time results and referee coordination, while Tournify's racket sports specialization showcases advanced capabilities like live streaming and automated bracket generation.

Our evaluation reveals these systems present trade-offs between sport-specific customization and generalizability, as well as between pricing models and feature accessibility. Torneopal's pay-per-event structure offers flexibility but lacks volleyball-specific tools, whereas Tournify's subscription-based model provides sophisticated features but at prohibitive costs for community clubs. Critically, neither system adequately addresses the unique requirements of local volleyball event management in terms of volunteer coordination, multi-role access, or community engagement features.

Building on these findings, SLEMS adopts a hybrid strategy, incorporating Torneopal's cost-effective approach while implementing Tournify's specialized sport adaptations, but with crucial innovations. The system maintains volleyball-specific functionality through automated lineup management and net height configurations, while introducing a freemium model to ensure accessibility. This synthesis of existing systems' strengths, while addressing their identified limitations through targeted improvements, results in a platform uniquely suited to Emtoz Volleyball Club's operational context and user needs. The design process consciously selected optimal elements from each reference system while innovating into areas where current solutions prove inadequate for local volleyball event management requirements.

V. METHODOLOGY

The development process for Sportify was guided by the principles of the Iterative and Incremental Development Model

[7][8]. The following tasks were undertaken in collaboration with the stakeholders from Emtoz Volleyball Club:

- Initial Requirements Gathering: Conducted surveys and interviews with stakeholders to identify and document the initial set of requirements.

- Prototyping and Feedback: Developed initial prototypes and wireframes using tools like Figma and gathered feedback from stakeholders for refinement.

- Incremental Feature Implementation: Implemented core features in phases, starting with basic event management functionalities, followed by participant registration, scheduling, and other essential features.

- Continuous Integration and Testing: Utilized Visual Studio Code and Git for code development and version control. Conducted regular testing, including unit testing with PHPUnit and manual testing for user acceptance, to ensure stability and reliability.

- Regular Stakeholder Reviews: Held regular review meetings with stakeholders to demonstrate progress, gather feedback, and incorporate changes based on their inputs.

- Deployment and Evaluation: Deployed functional increments for real-world testing and gathered feedback. Adjustments and enhancements were made based on user experience and stakeholder evaluations.

The iterative process ensured that the development remained aligned with stakeholder expectations and allowed for continuous improvement based on real-time feedback. The use of incremental development facilitated the gradual buildup of the complete system, reducing risks and ensuring a functional product was available early in the development cycle [9][10].

VI. RESULTS AND DISCUSSION

The evaluation of the SLEMS involved 30 respondents, including organizers, managers, and audience members, to assess user satisfaction and system usability as illustrated in Fig. 1. Survey results indicated that 46.7% of users were "Very Satisfied" with the system, while 33.3% reported being "Satisfied." This combined 80% positive response rate demonstrates strong user acceptance of the platform. The remaining 20% expressed a neutral stance, suggesting that while core functionalities were well-received, opportunities exist for further refinement of advanced features.

The study's limitations include a moderate sample size (n=30) and relatively short evaluation period (4 weeks), which may affect generalizability. However, the overwhelmingly positive feedback suggests SLEMS successfully meets its primary objectives as a volleyball event management solution. Future research should explore long-term usage patterns with an expanded participant pool to further validate these findings.

VII. CONCLUSION

SLEMS successfully addresses the critical challenges faced by Emtoz Volleyball Club in managing local tournaments. By transitioning from manual processes to an automated, web-based platform, SLEMS demonstrates significant improvements in operational efficiency, accessibility, and user satisfaction. The system's development using the Iterative and Incremental Model ensured alignment with stakeholder needs through continuous feedback and phased implementation.

Key outcomes from the User Acceptance Testing (UAT) with 30 respondents revealed a strong positive reception, with 80% combined satisfaction ("Very Satisfied" and "Satisfied") and no negative ratings. High usability scores (46.7% "Excellent" for navigation) further validate the system's intuitive design. Role-specific functionalities—such as organizer tools for scheduling, manager portals for team registration, and audience-friendly mobile access—effectively cater to diverse user requirements.

While the study's moderate sample size (n=30) and short evaluation period (4 weeks) limit broader generalizations, the results underscore SLEMS's potential to transform volleyball event management in Malaysia. Future work should focus on longitudinal studies with expanded user groups and the integration of advanced features like predictive analytics for participant engagement.

SLEMS represents a scalable model for sports organizations seeking to digitize operations, reduce administrative burdens, and enhance community participation. Its success highlights the transformative power of tailored digital solutions in overcoming the unique challenges of local sports event management.
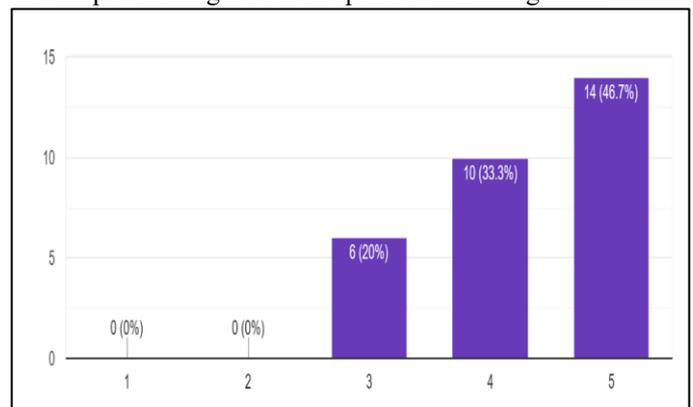

Figu.1: User Acceptance Test

VIII. RECOMMENDATION FOR FUTURE IMPROVEMENTS

To further enhance SLEMS and maximize its benefits for users, several key improvements are recommended based on the study's findings and user feedback:

- First, the system would benefit significantly from enhanced social media integration. By incorporating direct sharing capabilities to popular platforms like Facebook and Instagram, along with automated posting features for real-time updates, the system

could dramatically improve event visibility and participant engagement. Additionally, integrating social media analytics would allow organizers to measure promotional effectiveness and optimize their outreach strategies. These enhancements would address current limitations in communication and help events reach a wider audience.

- Second, implementing a robust feedback mechanism within the system is crucial for continuous improvement. This should include in-app rating systems, structured post-event surveys, and sentiment analysis tools to systematically collect and analyze user input. Establishing a regular review cycle to prioritize and implement user-suggested features would ensure the system evolves in line with user needs and maintains high satisfaction levels over time.

- Finally, several additional features could further elevate the system's functionality. Push notifications for urgent updates, AI-optimized scheduling to prevent venue conflicts, and gamification elements like player rankings would enhance both practical utility and user engagement. These strategic enhancements would position SLEMS as a comprehensive, forward-looking solution for volleyball event management, capable of adapting to future challenges and technological advancements in sports administration.

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REFERENCES

[1] R. T. Fielding and G. Kaiser, "The Apache HTTP Server Project," IEEE Internet Computing, vol. 1, no. 4, pp. 88-90, doi: 10.1109/4236.612229.

[2] L. Surya, D. M. Patel, and R. T. Yarlagadda, PHP For Beginners. Lunawada: Red'Shine Publication, 2021. [E-book] Available: https://papers.ssrn.com/sol3/papers.cfm?abstract id=3834055.

[3] Idloom-events Europe, "Idloom-events. A complete Event Management & Registration Software," [Online], Available: https://www.idloom.com/en/events/how-it-works.

[4] Eventzilla, "Eventzilla. Event management software," [Online], Available: https://www.eventzilla.net/event-management-software.

[5] Torneopal, "Torneopal: Tournament and League Management Software," [Online]. Available: https://www.torneopal.com/.

[6] A. Kumar, "Tournify: Tournament and League Management Software," [Online]. Available: https://tournify.in/.

[7] A. Dennis, B. Wixom, and D. Tegarden, Systems Analysis and Design: An Object-Oriented Approach with UML. United States: Wiley, 2015.

[8] H. Chen, R. Kazman, and S. Haziyev, "Strategic Prototyping for Developing Big Data Systems," IEEE Software, vol. 33, no. 2, pp. 36-43, 2016, doi: 10.1109/MS.2016.36.

[9] R. Yanto, Manajemen Basis Data Menggunakan MySQL. Yogyakarta: Deepublish, 2016. ISBN: 978-602-475-256-9.

[10] J. Reynolds, "Project Management: The 3 Major Project Types," Project Smart, 2015. [Online]. Available: https://www.projectsmart.co.uk/project-management-the-3-majorproject-types.php