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Section: Information Technology, Cyber Security and Computer Engineering

UTILIZING SWOT ANALYSIS IN DESIGNING AN INFORMATION SYSTEM FOR REAL-TIME COVERAGE OF SPORTS EVENTS

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Abstract. This research paper presents a study on the application of SWOT analysis in the planning and development of an information system designed to broadcast the results of winter sports events. The project focuses on the creation of an interactive web platform that provides real-time access to sports statistics, analytics, and visual content. Based on the SWOT analysis, the study identifies the system's strengths and weaknesses, as well as the external opportunities and threats that may influence the success of the platform's implementation.

Keywords: information system, SWOT analysis, winter sports, data visualization, sports analytics, strategic planning.

Introduction. In today's information-driven world, there is a growing demand for high-tech solutions that ensure timely coverage of sports events. This need is especially pronounced in the context of winter sports, which remain underrepresented in the digital domain due to their seasonal nature and limited media exposure. Traditional information channels no longer meet the expectations of an active audience seeking prompt and in-depth analysis of competition results. Therefore, the development of a new web platform that combines advanced data processing, visualization technologies, and personalized user experiences is both timely and essential. Within this framework, SWOT analysis serves as a powerful tool for strategic planning, enabling the evaluation of internal and external factors that may influence the project's success.

Research objective. The primary objective of this study is to justify the feasibility of developing an information system for broadcasting winter sports events by conducting a SWOT analysis to identify strategic opportunities, risks, and competitive advantages of the platform.

Main part. The analysis of a project's strengths and weaknesses is a crucial phase in planning, as it helps assess the realistic prospects for implementation, anticipate potential risks, and outline strategies for resource optimization. SWOT analysis assists in identifying the competitive advantages of the proposed information system, defining its development trajectory, and formulating strategic decisions for successful deployment. In a digital environment where sports content is consumed by millions in real time, understanding the challenges the project may face is of critical importance.

Winter sports possess specific characteristics, such as dependency on seasonality, weather conditions, regional popularity, and the technical sophistication of media coverage. Traditional media resources are often unable to provide comprehensive insights into such events, and existing information platforms are frequently limited in scope and flexibility. Thus, there is a pressing need not only to assess the current market landscape but also to explore technological opportunities for enhancing data analytics and user engagement.

Furthermore, SWOT analysis enables the projection of how modern technologies – such as algorithmic processing of sports data, machine learning, and real-time visualization – can be effectively integrated. Identifying potential threats and barriers allows developers to formulate mitigation strategies and ensure the platform’s stable performance. The conducted analysis serves as a foundation for strategic decision-making that will allow the platform to compete effectively with existing solutions and deliver a unique product tailored to both professional analysts and a broad audience of winter sports enthusiasts.

Issues related to decision-making and the strategic development of project-based activities through the application of SWOT analysis are extensively addressed in the literature [1–4].

Identification of Strengths (Str.).

Str.1. Automated data collection and analysis. The system employs algorithmic methods to process sports data, minimizing human error and ensuring fast and accurate result updates.

Str.2. Interactive visualization. The platform supports graphical representation of statistics, 3D tracks models, dynamic charts, and analytical dashboards.

Str.3. Real-time mode. Timely updates on competitions and athletes allow users to access up-to-date information without delays.

Str.4. Flexibility and personalization. Users can tailor their information feed to match their interests, selecting favorite sports, teams, and athletes.

Str.5. Multilingual support. The platform is available in multiple languages, making it accessible to an international audience.

Str.6. Integration with social media. Built-in tools enable users to discuss events, share content, and read comments from experts and athletes.

Str.7. Mobile adaptation. A fully functional mobile app provides convenient access from any device.

Str.8. Scalability to other sports. The system's core architecture allows adaptation for other sports disciplines beyond winter sports.

The next step is to identify weaknesses (W).

W.1. High development and maintenance costs. Implementing machine learning algorithms, interactive visualization, and large-scale data processing requires substantial resources.

W.2. Dependence on data sources. The accuracy and timeliness of the platform depend on access to official sports databases and third-party APIs.

W.3. Competition with major platforms. Industry leaders such as ESPN, NBC Sports, and Eurosport already have established audiences, making user acquisition challenging.

W.4. Potential usability complexity. Advanced features like analytical dashboards may be difficult for non-technical users to navigate.

W.5. Data protection concerns. Ensuring a high level of cybersecurity is essential to prevent data breaches and maintain user trust.

W.6. Strong seasonal dependency. Interest in winter sports peaks only during certain months, which may reduce platform activity during the off-season.

Let's define the possibilities (Opp.). Their list is given below.

Opp.1. Collaboration with sports federations and organizations. The possibility of official partnerships with international and national winter sports federations.

Opp.2. Feature expansion. Incorporating AI-based predictions and augmented reality tools to analyze athlete performance.

Opp.3. Monetization through premium features. Advanced tools for analysts, coaches, and professional athletes could be offered via subscription.

Opp.4. Entry into international markets. Regional adaptation of the platform will enable audience growth across different countries.

Opp.5. Implementation of VR/AR technologies. Viewers could rewatch events from different angles and analyze athlete movements in a virtual environment.

Opp.6. Development of an e-sports component. Integration with sports simulation games and virtual competitions could attract a younger audience.

Opp.7. Automated content generation. Using AI to produce articles, video highlights, and analytics based on real-time competition data.

Opp.8. Educational modules. The addition of training content for athletes, coaches, and fans explaining the specifics of winter sports.

The fourth stage is to identify threats (Thr.). A list of possible threats is given below.

Thr.1. Legal restrictions. The need to obtain licenses for using sports content and to comply with copyright regulations.

Thr.2. Rapid development of competitors. Established platforms may quickly implement similar features, reducing the uniqueness of the product.

Thr.3. Server capacity challenges. High computational demands for real-time data processing could strain infrastructure.

Thr.4. Market instability in winter sports. Fluctuating popularity of disciplines and reduced funding may affect demand for the platform.

Thr.5. Cybersecurity risks. Potential hacking incidents or data leaks may undermine user trust.

Thr.6. Regional restrictions. Access issues in certain countries due to geopolitical or legal limitations.

Thr.7. Dependence on the sports calendar. User engagement may decline during the off-season or when major events are not taking place.

To better understand how SWOT analysis can serve as a knowledge-based tool for evaluating a project and its product, we will explore how strengths and weaknesses may evolve through their interaction with identified opportunities and threats (Table 1).

Table 1 Exploring the interaction between strengths and weaknesses in the context of identified opportunities and threats

SWOT element code	Interaction development characteristics
Str.1 + Opp.2	The use of machine learning algorithms will not only allow data analysis but also event outcome forecasting, which will attract analysts, betting companies, and fans.
Str.5 + Thr.6	The implementation of proxy servers or partnerships with local providers will help avoid access blocks and ensure availability in regions with strict restrictions.
W.3 + Opp.4	Collaborating with local sports organizations and forming exclusive partnerships may help the platform compete with large-scale platforms lacking deep regional reach.
Str.7 + Opp.3	Launching a mobile app with free access to basic features and premium content for analysts and coaches can establish a sustainable financial model.
W.2 + Thr.1	Utilizing open data, crowdsourcing mechanisms, and agreements with independent journalists can help reduce licensing risks.
Str.8 + Opp.6	Integrating with e-sports simulators (e.g., winter sports in eSports) can expand the audience by engaging younger generations.
W.6 + Thr.7	Offering educational courses, historical overviews, and interactive materials will help maintain user interest during off-season periods.

The cross-impact analysis revealed that many of the identified threats and weaknesses can be effectively mitigated through corresponding opportunities. Leveraging advanced technologies, adapting the platform to new markets, and implementing a well-planned monetization strategy can help minimize risks and ensure the successful execution of the project.

Overall, the analysis demonstrates the significant potential of the proposed information system to promote winter sports, particularly through its innovative approach to data processing and interactive visualization. Core strengths such as real-time functionality, personalized content delivery, and integration of modern technologies provide the platform with a distinct competitive edge.

At the same time, it is important to acknowledge the challenges associated with high development costs, compliance with licensing regulations, and the possible seasonal volatility of user demand. To reduce these risks, the project should implement

an effective monetization strategy, establish partnerships with sports organizations, and gradually expand the platform's functionality.

Successful implementation of the project will result in a unique product that delivers high-quality coverage of winter sports events and contributes to increasing their popularity among a broad audience.

Research results and discussion. The SWOT analysis identified eight key strengths of the proposed platform, including automated data processing, real-time updates, content personalization, mobile adaptation, and multilingual support. The weaknesses include high development costs, reliance on third-party data sources, and a potentially complex user interface. The analysis also revealed significant opportunities, such as partnerships with sports federations, integration of AR/VR technologies, automated content generation, and educational modules. Identified threats involve legal restrictions, seasonal demand fluctuations, and competition from established international platforms.

The cross-impact analysis demonstrated that combining specific strengths with appropriate opportunities can effectively mitigate risks. For example, mobile adaptation paired with a monetization model can ensure financial sustainability, while the implementation of AI-based predictions can enhance user engagement. Overall, the SWOT analysis enabled the formulation of a strategic development framework for the proposed information system.

Conclusions. The conducted SWOT analysis confirms the strong potential of developing an information system dedicated to broadcasting winter sports events. The innovative approach to data processing and visualization offers distinct competitive advantages in the market. However, the success of the project largely depends on its ability to address challenges related to funding, legal compliance, and seasonal engagement. By applying strategic planning grounded in SWOT findings, it is possible to develop a robust roadmap for system implementation that aligns with the needs of diverse target audiences.

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