



RESEARCH ARTICLE

Sports Business Management under Uncertainty and the Impact of Probabilistic Models on the Strategy Effectiveness in the Football Industry

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ABSTRACT

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The article describes the significance of sports infrastructure for successful sports business operations. It refers to a study conducted by the international consulting firm KPMG, titled "The Value of Community Sport Infrastructure", highlighting the impact of community sports infrastructure beyond the buildings and facilities and even beyond the sports they are intended for in Australia. Sports infrastructure can facilitate social interactions and promote skills development, individual qualifications, and the creation of strong, safe, and inclusive communities. It is important to note that these benefits are not limited to on-site interactions but extend beyond the facilities. Football stadium construction, operation, and maintenance can support economic activity and create regional jobs. The development of new facilities or the renovation of existing fields and stadiums can lead to improvements in the surrounding environment, the transformation of underutilised areas, increased safety due to street lighting provision, and the creation of additional shelters (which is relevant during times of war) from adverse weather conditions, as well as greening of the region. Sports infrastructure also significantly facilitates public events such as cultural festivals, concerts, educational programs, and scientific conferences. Additionally, sports facilities can be used by commercial organisations such as medical clinics and company offices. Sports infrastructure's availability and development level significantly impact public interest in physical culture and an active lifestyle. Additionally, it affects the quality of sports and its contribution to the development of other societal spheres. To engage the population in the sports sphere, especially football, it is necessary to conduct promotional and incentive actions among children, improve service standards, and enhance the quality of sports goods. Additionally, accessible sports infrastructure that meets established standards and allows for developing various sports disciplines and directions should be created.

INTRODUCTION

The assessment of the physical education system of world sports leaders indicates that in countries with high performance and achievements, popular mass sports, such as football, receive special attention in the physical education of children and youth. The cornerstone of this system is sports activities in schools and

universities. Sports infrastructure enables individuals to enhance their physical abilities, improve their health, and increase their lifespan, helping their bodies resist negative influences in daily life (Escamilla-Fajardo et al., 2018; Moritz et al., 2000).

Sports facilities are a crucial component of sports infrastructure, serving as the primary guarantee for hosting various competitions and the material foundation of sports culture. They are created specifically for conducting sports events, training, and competitions. The development of sports infrastructure is demonstrated by the rise in revenue from sports television broadcasts and football matches, as well as the sports services sector. Schools offer optional classes in general physical education and mandatory physical education classes included in the curriculum, which are organised together with sports societies (Selickaite et al., 2019). These classes provide games and sectional activities in various sports. This initiative enables more students to participate in sports activities beyond their classes, introduces them to various sports, and encourages their involvement in sports, with a particular emphasis on football, the world's most popular sport with billions of fans and significant revenue generation. The efficiency of the football industry in many countries is a crucial factor in economic growth, job creation, and social integration (Roy et al., 2018; Kraus et al., 2020).

Sport is a significant economic sector and one of the most commercialised areas of activity worldwide. It is particularly true for football, the most popular sport. To ensure success, potential investors and football club managers must prioritise risk identification, systematic analysis, and management and develop comprehensive measures to minimise risks.

LITERATURE REVIEW

Alaminos and Fernández (2019) proposed a model for predicting financial crises in the European professional football industry. In their view, the activities of football clubs are unique in many respects, so it is essential for both financial managers and other stakeholders, such as investors, to have tools specifically designed for them. Galariotis et al. (2018) presented a combined methodology for simultaneously assessing football clubs' business, financial, and sporting performance using the example of France. Although professional football clubs are businesses, the authors believe they belong to a particular industry that differs from those where financial health is crucial to success (Constantinou & Fenton, 2012; Rohde & Breuer, 2018). Success in football is victory, so clubs create value from a financial perspective and in terms of sporting results.

Escamilla-Fajardo et al. (2020) investigated the impact of various factors on the results of sports teams during matches (Figure 1). According to a study by Catapult Sports conducted in 2021, in the English Premier League, the average power output per minute is about 3.1 W/kg, in the Spanish La Liga – about 2.9 W/kg, in the Italian Serie A – about 2.7 W/kg, and in the German Bundesliga - about 2.6 W/kg.

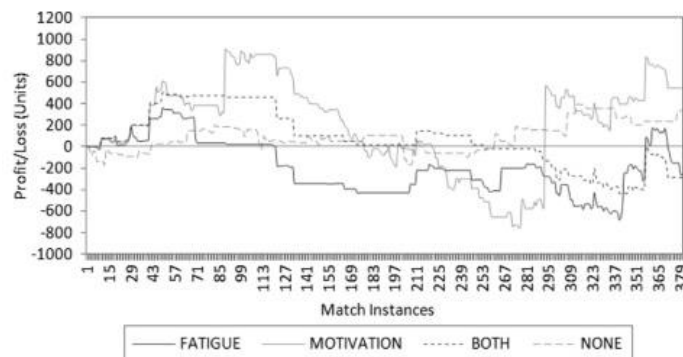


Figure 1: Total Impact of Various Factors Based on BP4

In contemporary research (Wenzel et al., 2020), scholars have contradictions regarding the use of branding in sports. Some scholars, such as Chadwick, Buck, and Holt, argue that fans are likely to disapprove or even

reject the idea that their favourite football club is a brand, while others, such as Richelieu, assert the opposite. A literature review on sports marketing shows the dominance of works from Europe, Asia, and America aimed at developing an international brand on other continents, such as Africa and Asia (Bordo & Haubrich, 2017; Pellegrini et al., 2020). However, they often need to pay more attention to the specific characteristics of management and business practices in these regions, leading to biased research.

The research aims to analyse the use and justification of sports industry management strategies in different countries worldwide and to study and optimise the sports business as a factor in combating the variability and uncertainty of the global political and economic situation.

MATERIALS AND METHODS

The study focuses on the sports market, with state support and the availability of effective products and services determining its development. A retrospective analysis was conducted to optimise risk management in the sports industry. The study aimed to minimise negative factors and risks that affect the profitability of the sports industry. Logical analysis, expert opinion comparison, system analysis, and forecasting were used.

RESULTS

When analysing state strategies in the sports industry during periods of uncertainty, it is essential to focus on leading countries in the sports business (Sharma et al., 2020). In the United Kingdom, there is no federal agency responsible for sports. However, organisations like the United States Olympic Committee or the National Collegiate Athletic Association develop various sports within their systems. These organisations operate independently and are self-sustaining, similar to private businesses (Zeimers et al., 2019).

They generate revenue by providing paid services, such as selling tickets to their organised sports events, distributing products with sports symbols, and receiving sponsorship and charitable contributions. The system for creating sports reserves is based on middle and higher educational institutions for amateur and professional sports. In the USA, professional sports clubs must have corresponding structures responsible for training young athletes. Collegiate and school sports are the main talent pools for the USA's national teams participating in international competitions, including the Olympic Games and professional sports leagues (Núñez-Pomar et al., 2020).

The primary financial incentive for young people to participate in sports is the athletic scholarship, which provides full or partial access to prestigious higher education through the university. This scholarship is available to baseball, basketball, hockey, American football, gymnastics, soccer, tennis, water polo, track and field, golf, and swimming athletes (Hammerschmidt et al., 2020). However, only the most promising student-athletes are awarded full scholarships covering the entire course of study at university. The National Collegiate Athletic Association (NCAA) is the primary organisation for collegiate sports. As of the 2022–2023 academic year, over half a million college athletes participate in 19,917 teams, competing annually in 90 NCAA championships across 24 sports divisions.

United Kingdom. The sports sector in the United Kingdom comprises various organisations, such as national and local government bodies, sports committees, national sports federations, regional schools, and clubs. The government formulates policies for both elite sports and mass participation in sports. The Department for Digital, Culture, Media, and Sport is responsible for policy in physical education and sports in the United Kingdom. The department receives most of its funding directly from the national budget. Authority for allocating funds and implementing state sports policy is delegated to five bodies: UK Sport and the National Councils of England, Wales, Scotland, and Northern Ireland (Ruta et al., 2019).

The government agency “UK Sport” undertakes strategic planning, funded by two-thirds from the state budget and one-third from the National Lottery. Its main functions include supporting sports conducted by Team GB, coordinating efforts to host major international sports events in the UK, representing English sports interests internationally, and funding elite athletes. National councils are increasingly involved in

developing sports infrastructure, increasing the number of people participating in physical education, and helping talented athletes, including those with disabilities, develop their potential.

When considering the development of physical education and sports in the UK, it is essential to note that the global success of British athletes is based on a system that combines state support for sports infrastructure with significant private investment in elite sports. In the UK, individual sports are managed by over 400 independent organisations responsible for organising competitions, selecting athletes, and preparing national teams. Sports associations have the right to oversee the expenditure of funds without hindrance. In addition, sports organisations that receive significant profits from television broadcasts must allocate at least 5.0% of the funds received to construct sports facilities for mass use.

Japan. The Japanese government has a long-standing tradition of promoting a healthy lifestyle, particularly in schools and higher education. The development of physical education programs is a crucial focus of state policy, with particular attention paid to sports infrastructure. The Japan Sports Agency, established in 2015, oversees this issue at the national level and operates under Japan's Ministry of Education, Culture, Sports, Science, and Technology. The agency's responsibility is to create strategies to encourage physical education and sports participation among citizens of all ages, regardless of their background.

In Japan, many municipalities have established “central” sports clubs (over 300 nationwide) that are part of a nationwide network for training professional athletes (Saienko, 2016; Kindzer et al., 2018). Most educational institutions have sports facilities or stadiums, including around 150,000 nationwide, with approximately 30,000 indoor pools and 40,000 arenas. State-funded coaches' conferences are held regularly for specific disciplines, usually at least once a year, where experts can exchange developments in athlete training methods.

The mass media plays a vital role in promoting a healthy lifestyle among the population (Leonov, 2020). Most television channels regularly broadcast sports events or sports programs during prime time. Leading athletes are often guests on radio and television shows. Additionally, newspapers dedicate several columns to sports daily and specialised publications and magazines. In summarising foreign experience, it is evident that physical and sports education strategy is highly valued in all civilised countries. The number of sports disciplines and types continually increases, increasing production and services.

The objective of any enterprise is to achieve economic success, which is closely linked to the assessment and adoption of various strategies. A football club can be considered an enterprise, and the transfer market and player acquisition are a kind of activity (Maksimenko et al., 2022). Therefore, transfer strategies can significantly impact the team's sporting potential, and the scale of catastrophic transfer risks and potential consequences may cast doubt on the club's continued existence.

Organisational and economic mechanisms for managing the football industry are essential for enhancing its effectiveness. They include tools such as strategic planning, financial management, personnel management, marketing and advertising, and quality management. Each characteristic will be examined in detail.

Strategic planning. Strategic planning is one of the main organisational and economic management mechanisms in the football industry. It involves defining long-term goals and objectives and choosing the most effective strategies and tactics for their implementation. A critical stage is analysing the external and internal environment, based on which the football organisation's development strategy is formed.

Financial management. Financial management in the football industry plays an important role. It includes managing financial resources, budget control, financial analysis, and planning. Football clubs must maximise their financial resources and optimise their expenses.

Personnel management. In the football industry, personnel management plays a crucial role. It includes recruitment and selection of personnel, performance evaluation, determination of development prospects, and motivation. Personnel management aims to create a team capable of achieving maximum results (Lisboa et al., 2016; Eggers, 2020).

Marketing and advertising. Marketing and advertising in the football industry are critical success factors. They include promoting the football organisation, attracting fans, sponsors, and investors, and creating a positive image. Quality management in the football industry involves controlling and improving the quality of all football-related processes, from player and coach training to match organisation and stadium management.

The activities of a football club with necessary efficiency can be hindered by transfer risks, the consequences of which may lead to deteriorating sports results, reputational losses, and financial losses. If bankruptcy and insolvency are the primary adverse outcomes of risk for a company, then for a professional football club, it is the lack of high sports results.

The financial solvency of a football club is understood as the readiness to fully make necessary payments to conduct full-fledged professional activities (payments under contracts to all employees/players/staff, organisation and holding of matches, logistics). Loss of solvency can also result in loss of competitiveness and reputational losses. Competitiveness is the absence of a decline in the team's sports results and the ability to compete with opponents in individual matches and throughout a competition period. Reputation losses refer to adverse informational backgrounds, conflicts, and confrontations with fans or specific active supporter groups. It leads to the loss of the football club's commercial attractiveness as a brand and advertising platform for advertisers.

There are different approaches to understanding and structuring the sports industry (Leonov, 2018). One approach is based on analysing the exchange of economic, social and psychological benefits between sports organisations, athletes, fans, and sponsors. This exchange takes place in a space resistant to market systems with specific characteristics that are closely interconnected. The market structure of the sports industry can be represented as follows:

- market of sports events;
- market of sports goods;
- market of sports services;
- market of sports facilities;
- sports industry infrastructure markets;
- market of sports personnel;
- market of partners;
- markets of quasi-sports products.

The sports industry has facilitated the emergence of quasi-sports products (from the Latin “quasi” meaning “something like” or “around”). These products belong to their respective sectoral or functional markets, but they also incorporate sports themes and are often closely related to the main markets of the sports industry. Examples of quasi-markets include bookmakers, publishers of sports literature, and sports bars.

One characteristic feature of competition in the sports industry is that organisations can play different market roles in each situation. For instance, two professional football clubs can simultaneously be competitors for the loyalty of city residents, clients, and suppliers if the clubs negotiate player transfers (Brocard, 2015). The economic significance of football is highlighted by increased sales in merchandising and sponsorship activities, as well as higher revenues from international transfer markets (Archibugi et al., 2013). Additionally, significant surpluses are associated with television and marketing rights due to the rise in stadium spectators and television audiences.

Revenue generation is crucial in the modern commercial and competitive football business. The profitability of a football club is determined by its revenue size and the ability to balance income with expenditures (Sass, 2016). Sports marketing has evolved with the emergence of new technologies. Due to the global trend

towards internationalisation and globalisation, sports brands are actively seeking new external markets (Soininen et al., 2012; Alonso-Almeida et al., 2015).

DISCUSSION

There are clear segmentation examples in physical culture and sports, such as the preference for “elite” sports that dominate. It is well-known that being part of the highest social strata necessitates participation in specific sports, such as tennis, sailing, windsurfing, and, more recently, Eastern martial arts. When developing and implementing these sports, it is essential to anticipate the needs of the identified market segments, specifically the target consumer groups. It includes providing high-level service, top-notch equipment and gear, and top-notch coaches. Additionally, appropriate decoration of sports halls or clubs and high price levels should be considered.

New technologies, partnerships, cross-marketing, or the creation of network product models can also open up new perspectives. Benchmarking can be used to assess the potential for product development. For instance, NHL clubs offer many new ideas for working with fans. Pre-match barbecues are a popular component of a hockey match day, where fans can cook in specially equipped parking lots near the ice palace and discuss the upcoming game over a bottle of beer.

The multi-level model facilitates a systematic approach to product development, enabling control over its status and competitiveness and determining prospects and directions for development. It allows for diagnosing the product's competitiveness, identifying its strengths and weaknesses, and determining directions for improvement. The product policy encompasses decisions related to the market positioning, assortment, and structure of the product, as well as its customisation to meet specific customer needs, development of new products, and organisation of the relationship between all the diverse products of the sports organisation.

It is important to note that the product policy should be viewed as a tool of the marketing mix rather than the product itself. Sports organisations typically manage multiple market products, including events, services, and goods, to achieve common marketing goals. This collection of interconnected products is known as a product portfolio, consisting of both sports and non-sports and material and non-material products. The role of management is to select the most effective means to achieve the marketing goals of the sports organisation.

The primary product that forms the foundation of the entire sports industry is undoubtedly the sports event. All relationships between athletes, clubs, leagues, federations, promoters, sponsors, licensees, and others revolve around it. Athletes undergo gruelling training precisely for their participation in and success at competitions. The spectacle they create is unpredictable, vivid, and emotional, attracting numerous fans and spectators. The demand for fitness clubs, sports equipment, gear, and information is driven by the desire to emulate champions and get closer to one's favourite sport.

CONCLUSION

Sporting events are categorised into four categories: competitive, entertainment, socially oriented, and leisure. Organisers often combine multiple objectives to attract attention to the event and enhance its economic or social effectiveness. For instance, the modern Olympic Games include competitions of the highest sporting level and numerous entertainment, social, and business events.

Informational products are created by sports organisations and specialised companies holding relevant rights. For example, Sky, a British satellite broadcaster, broadcasts the world's most famous competitions in dozens of sports. Additionally, Time Warner, an American media conglomerate, has published *Sports Illustrated*, the most popular weekly magazine, for 60 years. Its circulation has long surpassed three million. The demand for consuming information products among like-minded individuals has led to a new type of product – public viewing of sporting events in specially equipped fan zones. These zones combine the advantages of television with the real emotions of being at the event. Fans can watch the competition on

giant screens in the company of friends, creating a unique atmosphere similar to that experienced in the stadium. This is an example of a successful sports organisation in uncertain conditions, such as during the coronavirus pandemic or times of war. The use of sensors can provide excellent opportunities for the effective development of football and the allocation of club budgets.

Author Contributions

Ya. L.: Conceptualization, Methodology, Resources, Formal analysis, Writing – Original draft, Writing – Review & Editing.

I. S.: Conceptualization, Methodology, Data Curation, Writing – Original draft, Writing – Review & Editing.

V. K.: Conceptualization, Methodology, Formal analysis, Project administration, Writing – Original draft, Writing – Review & Editing.

M. B.: Conceptualization, Methodology, Data Curation, Writing – Original draft, Writing – Review & Editing.

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