

Article

Examining the sustainable leisure and business values in sporting events and lottery analyses development

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Abstract: Purpose: This study aims to clarify the meaning of sport analysis, explore the contributions derived from sporting event analysts, and highlights the importance of responsible sport gambling. It also investigates how sustainable practices can be integrated into sports analysis to enhance social well-being. **Design/methodology/approach:** Secondary text data from government documents, news articles, and website information were extracted by searching keywords such as sports lottery and sports analysis in traditional Chinese, and then analyzed to establish the research framework and scope. Subsequently, 18 interviews were conducted with stakeholders to gain deeper insights. **Findings:** The content analyses reveals that sport analysis tends to be sport data science. Sporting event analysts may contribute to improving the performance of players or a team, enhancing spectator sports, and increasing sports lottery revenues. In the leisure aspect, the professionalism of sporting event analysts not only increases epistemic and entertainment values in spectator sports but also boosts engagement with sport lotteries. To ensure these enhancements remain beneficial, it is vital to emphasize responsible sport gambling and sustainable practices that protect vulnerable groups and promote long-term health benefits for those involved in sports. The integration of sustainable practices in sport analysis and the expertise of sporting event analysts can significantly advance economic and social development by generating funds through sport lottery industry for athlete programs, sports infrastructure, and educational initiatives, aligning with multiple Sustainable Development Goals. Additionally, the professionalism of these analysts may enhance public understanding and engagement of sports, promoting increased participation in sports, reducing healthcare costs, and contributing to the development of a healthier and more resilient society. **Originality:** Emphasizing responsible sports gambling is essential to the sustainability of sports lotteries and the role of sporting event analysts.

Keywords: sport lottery; sporting event; sport gambling; data science; spectator sport

1. Introduction

In recent years, it becomes popular to consume sports lottery as a leisure activity associated with watching sports. Sports lottery tickets are issued for specific sporting events and outcomes with a charity nature. The ventures of sports lotteries are mainly used to fund the development of physical education, sports events, infrastructure and programs, and national athletes' financial supports and to improve sports facilities (Forrest and Simmon, 2003; Liu et al., 2022; Liu et al., 2019)

Taiwan's sports lottery has been issued for more than 16 years since the first year of issuance in May 2008 (Liu et al., 2019). The Sports Lottery Issuance Act is entitled "for the purpose of prompting sports, raising funds for training, discovering and taking care of sport talents, fostering international sports exchanges, and promoting social

welfare” (amended date 15 June 2022). The sports lottery mainly predicts the results of all kinds of sports games as the betting targets, and has thus provided the legal betting channel for the general public (Taiwan Sports Lottery, 2024).

With the gradual maturation of sports lottery issuance, a profession in sports lottery analysis has also emerged. On 29 April 2018, an organization of “Taiwan Sports Events Analysts Association” was officially established to promote and train professional sports analysts (Chang, 2022). At the same time, with the development of artificial intelligence, the use of algorithms to build predictive models also allows sport lottery analysis to see business opportunities in leisure and sport industries. This motivates the current study.

As the sports lottery system matures and contributes significantly to local economies and social programs, it becomes crucial to consider its impact on sustainable practices. The funds generated from sports lotteries likely contribute to enhance sports facilities and athlete training but might cause excessive or even addictive gambling victims. The consideration of responsible gambling is vital to ensure that the benefits of sports lotteries can foster a healthier and more sustainable community. Such sports entertainment can align with global efforts to promote responsible consumption and production patterns (Sustainable Development Goals, SDGs goal 12) (United Nations, 2024), and contribute positively to societal well-being.

2. Literature review

This literature review delves into the multifaceted dimensions of sport analysis, the roles and impacts of sporting event analysts, and the critical aspects of responsible sport gambling, with a focus on the interconnectedness of these elements within the broader sports and leisure industry. This review begins by exploring the evolution of sport analysis, highlighting the transition from traditional methods to advanced analytics, exemplified by concepts like Sabermetrics and the integration of smart technology in sports strategies. This section underscores the significant financial contributions of sport lottery analysis to the sports development fund and its implications for the sports economy. Large-scale sporting events can create ripple effects on industries such as tourism, hospitality, and infrastructure. These financial contributions can drive broader economic and social development by funding athlete programs, infrastructure, innovative entrepreneurship in sport industries, and healthcare initiatives, ultimately fostering a healthier and more resilient society.

Furthermore, the review examines the professionalization of sporting event analysts, emphasizing the educational and regulatory frameworks that support ethical practices in sports gambling. By understanding the diverse stakeholders involved—from government bodies and event analysts to spectators and bettors—this examination aims to paint a comprehensive picture of the current landscape and future directions of sport analysis and lottery systems. The ultimate goal is to highlight the importance of responsible gambling practices that not only safeguard participants but also contribute to the sustainable growth of the sports industry.

2.1. Sport analysis

Based on the acronym SABR for the Society for American Baseball Research,

plus “metrics” for measurement (Costa et al., 2019), the term, Sabermetrics, has become a buzz new word. The sports movie “Money Ball” and the Korean drama “Stove League” also mentioned the application of baseball statistical analysis in strategic analysis and recruitment of professional baseball players. Smart sport analytics (Rajšp et al., 2020) are included in various sport analyses for training, injury prevention, coaching, performing and game strategies.

Sport lottery analysis is one type of sport analysis with focus on the target, sport lottery, but still indirectly or directly related to general sport analyses. According to La Fleur’s World Lottery Almanac, the total turnover of Taiwan’s sports lottery reached US\$1424 million in 2018, which might be ranked the 6th worldwide (La Fleur, 2019; Liu et al., 2020). Since a specific percentage of the revenues generated from sports lottery is required to fuel the sports development fund (Taiwan Sports Lottery, 2024), this seems to possibly boost the sports industry. Beyond their direct financial contributions, sports events have long been recognized for their significant impact on the economy, stimulating sectors such as tourism (Quirante et al., 2024), transportation, infrastructure, and media, while bringing broader economic benefits that extend beyond the sporting domain.

The popularity of sports lottery also offers opportunities for the development of professional sport lottery analysis. People who are interested in sports lottery may rely on the analysis to thoroughly understand the sports and increase confidence in the prediction of a game’s outcome. Development of sport lottery likely contributes to the overall development of sport economy (Jingwei, 2015).

2.2. Sporting event analyst

After the release of sports lottery, many job opportunities have been created (Jingwei, 2015; Liu et al., 2020). Sporting event analyst has become one type of possible professionalism on the job market (Kuo, 2010). However, training programs for the relevant professional skill, ability and competence in being a sporting event analyst were not available until a certificate program initiated by “Taiwan Sports Events Analysts Association” on August 2019 (Chang, 2022). This program attracted a variety of participants with different background that wished to improve sporting event knowledge and help strengthen their career or business. Further, an extended website for profit was established as a platform for exchanging information among analysts and sport lottery consumers (Play sport, 2024). The sporting event analysts may demonstrate professional knowledge in the field of spectator sport industry and encourage more attention in sports. However, although sport lottery betting is legal, some illegal gambling events and fraudulent advertisements caused negative impacts on the sport lottery industry.

2.3. Responsible sport gambling

To ensure the sustainable development of the Taiwan sports lottery, responsible sport gambling is required (Liu et al., 2020). Many studies indicated possible psychosocial problems related to sports betting behaviors (Etuk et al., 2022; Li et al., 2012; Rodenberg and Kaburakis, 2013). Principles, guidelines and strategies of responsible sport gambling must be part of training materials for the certificate of sport

lottery analysts.

For example, World Lottery Association (WLA) (2021) adopted the Responsible Gaming Principles and Framework in 2006, which aimed at protecting lottery players and sustaining revenues for the public good. WLA declared that responsible gaming and play is the most critical element of corporate social responsibility in the lottery sectors and industry standards (world lottery association, 2021). Additionally, responsible gambling strategies (RGS) were examined by some previous studies (Lee et al., 2014). Supplementary and compulsory RGS (Lee et al., 2014) or sending limit-setting message to sports bettors (Heirene and Gainsbury, 2021) can be considered to minimize negative personal and social impacts such as gambling-related harms among gamblers (Etuk et al., 2022).

2.4. Possible stakeholders

According to the Merriam-Webster dictionary (2024), stakeholders may mean those who are involved in or affected by a course of action. The major stakeholders of the sports lottery in Taiwan include the government, the operator, retailers, and lottery players (Liu et al., 2020). Since sporting event analysts are highly related to sports lottery, these stakeholders would be also associated with the analysts.

In addition, because sporting events are the major content in spectator sports, the producers such as players, coaches, and referees, and the media are also possible stakeholders. Further, suppliers such as schools and the association can help provide training programs for sporting event analysts and are potential stakeholders (Figure 1). Spectator sports, the operator, and government provide contents, issue the lottery, and make guidelines of responsible gambling together to create a job opportunity of sporting event analysts. On the other hand, the professionalism of sporting event analysts may be able to improve spectator sports, help train national athletes or school teams, and boost lottery business.

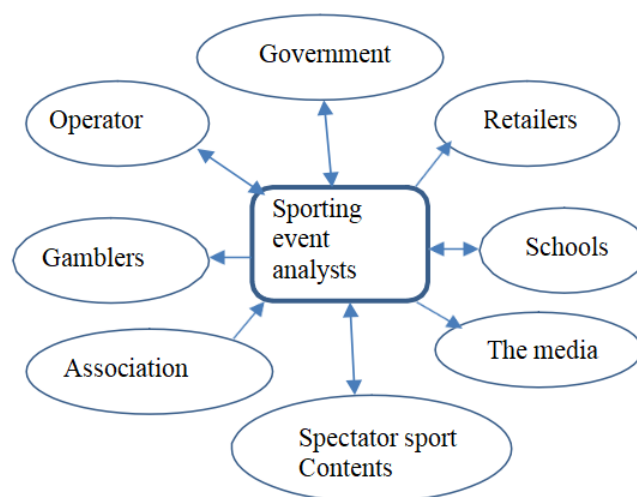


Figure 1. Possible stakeholders of sporting event analysts.

3. Research methods

This section delineates the methodologies employed to explore the dynamics of sport analysis and lottery systems. Utilizing multiple sources of data collection, the

study combines the rigorous examination of secondary data with in-depth qualitative interviews to build a robust research framework. Secondary data were meticulously gathered using keywords such as 'sport lottery' and 'sport analysis' to filter relevant government documents, news, and web content, which were then analyzed for thematic patterns and insights.

For interviews, a purposive sampling was employed to select a diverse group of stakeholders, ensuring a wide range of perspectives from lottery consumers, athletes, scholars, and legal experts. These interviews were systematically transcribed and subjected to detailed content analysis to uncover underlying opinions and themes about the impact of sport analysis in various sectors. The research methods section provides a detailed account of these processes, offering clarity on how the data informs the ongoing discourse on responsible sport gambling of sustainable practices and the professionalization of sporting event analysts within the sports and leisure industries.

3.1. Research design

Secondary data and interviews were adopted. Key words, sport lottery and sport analysis, were used to explore relevant texts including government announcement and regulations, news reports and website information. Content analyses help identify related issues, clarify the definition of sport analysis, and form the research framework and scope.

For interviews, purposive sampling was adopted to recruit participants primarily from stakeholders. In total, 18 interviewees were recruited from 10 lottery consumers, three athletes, one statistics scholar, one sport marketing scholar, two sporting event analysts and one lawyer. The semi-structured interviews were audio-recorded, transcribed verbatim, and analyzed by coding and the content analysis.

3.2. Research framework

Based on the literature review and secondary data, a research framework was developed (**Figure 2**). First, conceptualization of sport analysis and the sustainable benefits of sport analysis applications need to be clarified. Second, with a focus on sporting events and sports lottery, the sustainable values of the analyst certificate are the crucial part for discussion along with the emphasis on responsible sport gambling. Finally, the study aims to explore how sport analysis and sporting event analysts contribute to the sustainable development of sport and leisure industries.

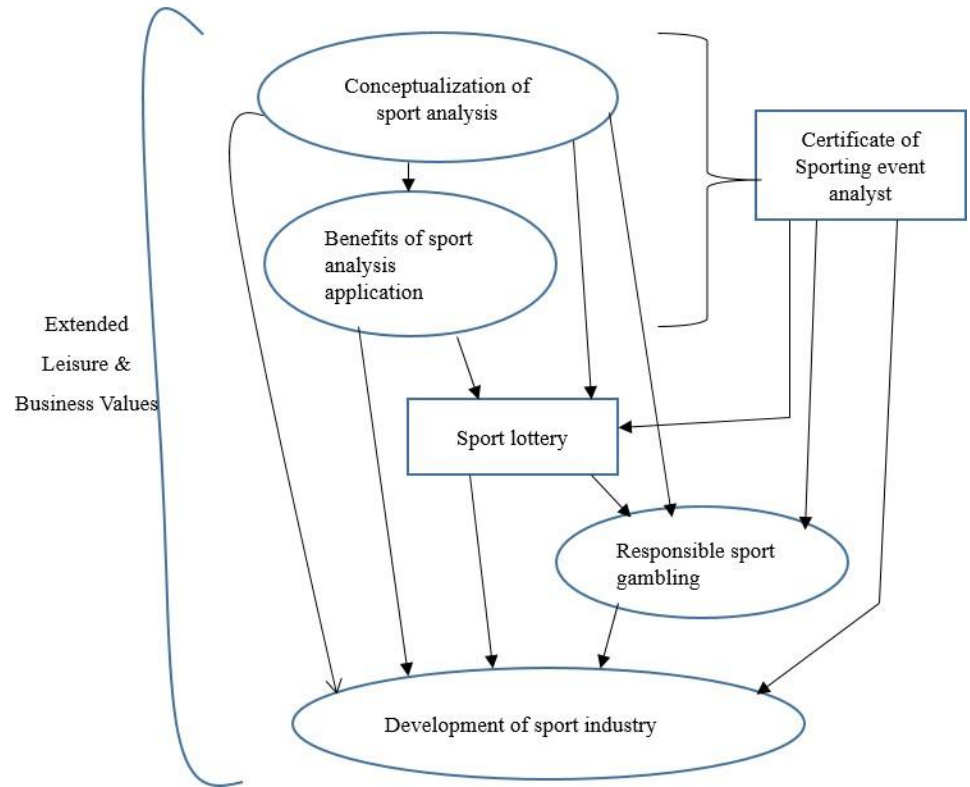


Figure 2. Research framework.

3.3. Interview outline

Based on the research framework, the interview outline included five questions (Table 1). The questions for the interviews are designed to gather comprehensive insights into the multifaceted roles and impacts of sport analysis and sporting event analysts within the broader context of sustainability and responsible gambling. Each question targets a specific aspect of sport analysis to elucidate its implications, applications, and perceptions among stakeholders in the sports industry.

Table 1. Interview outline.

<p>How do you define sport analysis?</p> <p>What fields do you think sport analysis can apply for?</p> <p>What are possible contributions from sporting event analyst?</p> <p>What is your opinion about responsible sport gambling and sustainable practices in sporting event analysis and sport lottery industry?</p> <p>What can leisure and sport industries benefit from sport analysis and more specifically from sporting event analysts?</p>

The first question aims to establish a foundational understanding of sport analysis as perceived by different stakeholders. The definition of sport analysis may influence other responses about its utility and impact. The second question asks where sport analysis can be applied. This question seeks to uncover the scope of its utility beyond the obvious areas. Responses could illustrate the versatility of sport analysis in fields such as player performance enhancement, injury prevention, team strategy development, marketing strategies, and fan engagement, thereby demonstrating its broad applicability.

The third question delves into the specific contributions made by sporting event analysts. Understanding possible contributions provides insights into the tangible benefits brought by professionals in this field. The fourth question addresses the ethical dimensions of sport analysis and sport lottery industries. The final question explores the broader benefits that the leisure and sports industries can reap from employing sophisticated sport analysis and employing skilled analysts. It looks at how these benefits extend beyond immediate economic gains to include improving athlete welfare, and potentially driving innovation in sports-related products and services.

4. Results and discussion

This section presents the findings from our study, exploring the conceptualization, application, and values associated with sport analysis and sporting event analysts, as well as considerations surrounding responsible sport gambling and sustainable practices. Initially, the results show how sport analysis is defined by various stakeholders. Following this, the practical applications of sport analysis are discussed. The section further examines the professional and economic contributions of sporting event analysts. Additionally, the discussion delves into the epistemic and leisure values that these analysts bring to the sports and lottery sectors. Finally, the section confronts the challenges and attitudes toward responsible sport gambling, revealing complex views on its efficacy and the role of individual behavior in maintaining ethical and sustainable gambling practices.

4.1. Conceptualization of sport analysis

One participant mentioned that sport analysis simply means big data analyses in sports. Another interviewee explained that sport analyses were to apply sport analytics, algorithm or artificial intelligence to whatever data we could get and help improve players' and teams' performance. Sport science might be another term interchangeably used for sport analysis.

Professionalism of sport analysis might consist of three parts: Data acquisition, analysis skills, and sport domain knowledge, one interviewee emphasized. This seems to show an interdisciplinary feature of sport analysis. Sport practices, statistics or mathematics, and computer science are combined for effective sport analyses. Similar to data science, sport analysis is expected to be like a "science of extracting knowledge and insights from [sport] data" (Ng, 2024) useful to improve performance. This study tends to define sport analysis as sport data science.

4.2. Application of sport analysis

The results of interviews showed that baseball, basketball, and soccer were the three most frequently mentioned sports that people in Taiwan might be interested in analyses of these sporting events for lottery purchase. The major units or targets of sport analyses are usually players or a team. The major outcome of sport analysis is to improve performance, to increase the ratio of win/loss, and mainly to predict the progress and outcomes of all kinds of games as the betting targets (Taiwan Sports Lottery, 2024). Those who benefited from sport analysis might include professional players, athletes, coaches, teams, physical therapists, fans, and lottery retailers and

consumers.

Sporting event analysis is part of sport analysis with a more specific analysis target on sporting events. Thus, sporting event analyst can contribute to spectator sports, the lottery industry, and competitive sports. One interviewee mentioned that a tour guide or sport YouTuber with a background of sporting event analyst would be a plus in sport tourism and in hosting a live sporting event. Previous studies have suggested that increased engagement with spectator sports can stimulate interest in personal participation in sports (Gau et al., 2018), potentially leading to higher levels of physical activity and improvements in public health. Further, the profit ratio of lottery issuance will be used as sports development earmark fund (Liu et al., 2020) to support school physical education, facilities, varsity, and national talents and athletes in competitive sports (**Figure 3**).

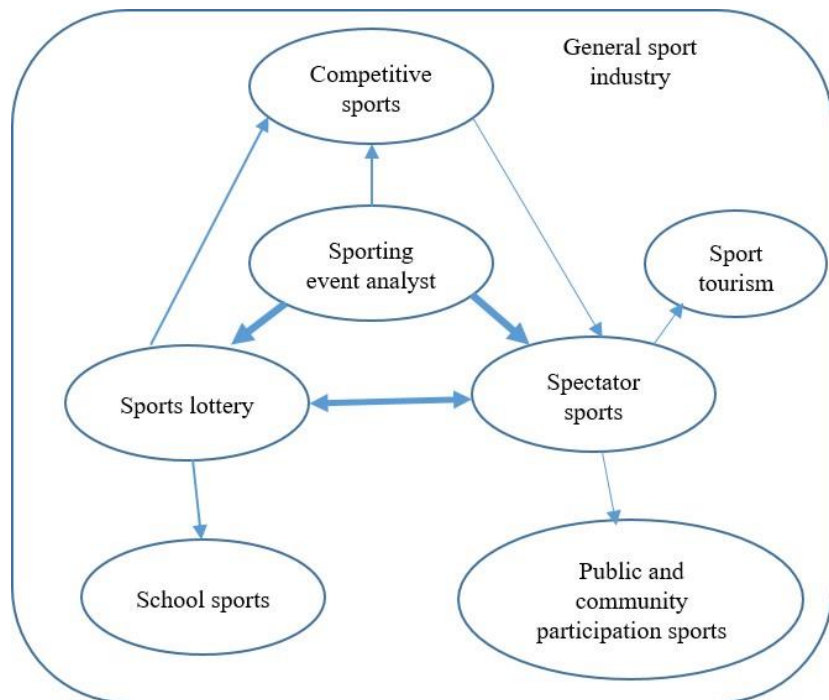


Figure 3. Contribution of sporting event analysts.

One of the most successful examples is playsport.cc (Play sport, 2024), established in Taiwan in 2009. This platform serves as a community for sporting event analysts and potential bettors, offering services in traditional Chinese. It represents an innovative business model that caters to both spectator sports and the sports lottery market. The platform provides real-time scores, match results, and team standings, allowing users to practice match predictions for free, engage in forum discussions, and buy or sell game predictions (Play sport, 2024). The website reports a monthly user base of around one million and has introduced an intriguing win-rate ranking, with the highest reaching 74% (Win Rate, 2024). To promote responsible and sustainable practices, the site has issued a statement: Encourages responsible betting and proper management of gambling funds (About us, 2024).

4.3. Values associated with sporting event analyst

In addition to the obvious economic value for lottery players, epistemic value

(Gau and James, 2013) is increased in spectator sports by the professionalism of a sporting event analyst. One interviewee said that after you bought a sport lottery, this would engage you to pay more attention to the game and to the target team of the lottery, making watching experiences more interesting. These are possible leisure values associated with sporting event analysts. Their work involves interpreting complex data and offering insights, which adds depth and excitement to the spectator experience, even though the outcomes remain uncertain due to the unpredictable nature of sports events.

As for business values, the professionalism of sporting event analysts may help a team to improve its performance and earn profit. The analysts may also encourage more interest in spectator sports and bring more revenues with the lottery industry, further increasing sports development earmark fund to support sport industries. An interviewee even mentioned that senior analysts were likely invited to be a consultant for a national team in an international competition. All these would feedback to enhance spectator sports. **Table 2** summarizes the extended leisure and business values of professionalism of sporting event analysts in Taiwan

Table 2. Extended leisure and business values of professionalism of sporting event analysts.

	Leisure value	Business value	Extended value
Spectator sports	Epistemic value	For fans, coach, players, referees, teams, scout, agents and others (for example, YouTubers, Physical therapist)	Public health, sporttourism
Sports lottery	Entertainmentvalue	Revenues, responsible gambling, sportjournalist, reporter and commentator	Improve schoolsports, Support national athletes
Competitive sports		Consultant	Enhance spectator sports

However, a few interviewees were not optimistic and indicated that certificates of sporting event analysts might not such useful as expected because Taiwan’s market was too small. Spectator sports are not popular in Taiwan. One interviewee explicitly expressed that this profession had to go international and look for a position in countries where gambling industries were more popular than Taiwan. Other interviewees also mentioned that sport gambling still had negative image in Taiwan and many lottery players went to illegal sport betting.

4.4. Consideration of responsible sport gambling and sustainable practices

Many interviewees agreed with responsible sport gambling to be added in promotion of sport lottery, but hesitated to admit its effectiveness. They believed that responsible gambling behavior still mostly relied on individuals’ self-discipline. Having said this, an interviewee argued that pathological gambling cases existed there, but these tended to be individuals and should not ignore general benefits brought by sport lottery.

One interviewee highlighted that the slogan of the Taiwan Sport Lottery (2002) encapsulates an enthusiastic approach to supporting favorite sport teams and players through betting on the sports lottery. This enthusiastic engagement not only fosters a deeper connection with the sports but also channels a financial support into the sports development fund. Through this fund derived from sports lottery, sport-related

industries receive substantial support, allowing the government to use these resources to cultivate more sports talents and promote “the ultimate goal: Healthy people, Great competitiveness and Vigorous Taiwan (Taiwan Sports Lottery, 2024).”

4.5. Impact on sustainable, economic and social development, and healthcare

The integration of sustainable practices within sport analysis and the work of sporting event analysts holds significant potential for advancing broader societal goals. Through the ripple or wave effects, sporting event analysis may drive overall economic and social development by generating substantial financial contributions to athletes programs, community sport infrastructure, and educational initiatives. The revenue generated from sports lotteries and the expertise of analysts can contribute to the sports development fund and can be channeled into developing sports facilities, supporting school sports programs, and enhancing the physical and mental well-being of the population. These contributions align with the Sustainable Development Goals (SDGs), particularly in promoting good health and well-being (SDG 3), quality education (SDG 4), and sustainable cities and communities (SDG 11).

Furthermore, the professionalism of sporting event analysts is likely to strengthen the connection between the public and sporting events. These analysts not only enhance the intellectual and entertainment value of sports but also promote public health by encouraging increased participation in sports or physical activities, driven by greater engagement and understanding of the sporting events. This, in turn, contributes to reducing healthcare costs and improving the overall quality of life. These positive impacts extend beyond immediate economic benefits, contributing to the sustainable development of a more resilient and healthy society that can thrive in the long term.

5. Conclusion and suggestions

“Taiwan Sports Events Analysts Association” was established in 2008 (Chang, 2022), and became the first organization to award a certificate of sporting event analysts as a profession. Along with the development of big data analysis, artificial intelligence, and data science, the effectiveness of sporting event analysis caused attention. The results of this study provide useful information for those who are interested in pursuing this certificate and for schools that consider creating a cross disciplinary training program or curriculum for cultivating the related skills.

5.1. Conclusion

This study concluded that sport analysis tends to be sport data science. Sporting event analysts focused on games, and may contribute to improve performance of players or a team, enhance spectator sports and increase sport lottery revenues. Epistemic and entertainment values are associated with the professionalism of a sporting event analyst in the leisure aspect. In order to have the development of sport lottery and sporting event analysts keep sustainable, responsible sport gambling must be always considered and emphasized.

The findings of this research highlight the growing significance of data-driven

analysis in the sports industry, particularly within the realms of spectator sports and sports lotteries. As the industry increasingly relies on sophisticated analytics, there is a clear trend toward the professionalization of sporting event analysts. These analysts play a crucial role in enhancing both the epistemic and entertainment value for spectators through the process of sports lottery predictions. This evolution could create a virtuous cycle: the industry funds generated from sports lotteries can further stimulate public participation in sports. The development of new career pathways and the expansion of specialized training programs for sport analysts has the potential to drive innovation and elevate industry standards.

Additionally, the emphasis on responsible gambling practices within this research highlights the necessity of integrating sustainable considerations in the sports lottery market. As the industry continues to grow, upholding ethical standards—both in the integrity of the players and the transparency of the lottery system—will be vital to preserving public trust and ensuring long-term engagement. This commitment to sustainability, ethical conduct, and the promotion of integrity in sports is expected to shape future industry practices, fostering a more resilient and socially responsible sports entertainment sector that aligns with global trends towards responsible consumption and production.

5.2. Suggestions

This study focuses on the quantitative side of sporting event analysis. However, one interviewee mentioned that sport analysis can also cover qualitative part of sports players' psychology. Further research is required to examine how to combine quantitative and qualitative aspects of sport analyses. Future research can also examine how to create and evaluate a training program for sporting event analysts. Further, it is crucial to examine how to develop a possible business model for a sporting event analyst as a freelancer or entrepreneur.

In conducting research on the sustainable development of sports lotteries and event analysis, some challenges and limitations may arise. One notable challenge lies in the application of AI and machine learning for analyzing player performance and executing effective training, preventing sports injuries, or predicting game outcomes. Accurately collecting and labeling data on player actions, particularly through AI-driven image recognition systems, requires extensive cross-disciplinary collaboration. This involves not only expertise in AI technology but also a deep understanding of the sport itself. To overcome this, fostering partnerships between AI specialists and sports analysts is essential. These collaborations may lead to innovative designs that effectively gather, analyze, and interpret data, ultimately aiding in recruiting the right players, improving training execution, outmaneuvering opponents, preventing injuries, and enhancing game outcome predictions.

Moreover, the integration of new technologies such as virtual reality and the metaverse introduces further research challenges in creating engaging and practical experiences for users. Future studies may need to explore how these technologies can be effectively applied to make the analysis process more interactive and immersive, thereby enhancing its appeal and accessibility. Successfully overcoming these challenges will be pivotal for advancing the field and ensuring the sustainable growth

of the spectator sports, sports lottery, and event analysis industries.

The leisure value of sporting event analysis is increasingly tied to sport and tourism safety. As global sporting events expand, so does the need to ensure the safety of participants, spectators, and surrounding communities. By incorporating crime statistics and economic data from international sources such as police and embassies, analysts can better assess venue safety (Szabolcs et al., 2022). Technologies such as drones, facial recognition, and predictive analytics further enhance this analysis (Ágnes et al., 2024), offering a macro-level view of event safety beyond just fans, players, and teams. Evaluating security measures, traffic management, and crowd control ensures that events are both successful and secure, benefiting the host region. Further research should explore how these macro-level safety concerns and sport policy can be integrated into sporting event analysis to balance leisure value with public safety.

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