

Innovative sports-embedded gambling promotion: A study of spectators' enjoyment and gambling intention during XFL games

Abstract

The sports industry has continued to grow on the basis of innovative practices. One such recent innovation in sport was the introduction of live on-screen betting odds during XFL game broadcasts. Such a service had never before been offered in the United States. This paper examines the impact of these live on-screen betting odds on fan engagement and consumer experience (increased spectator enjoyment and gambling intention) during the XFL season. Fuzzy-set qualitative comparative analysis reveals interesting results. For both increased spectator enjoyment and high levels of gambling intention, the combination of high levels of perceived enjoyment, excitement expectancy, and escape expectancy has the highest explanatory capacity. Moreover, increased XFL spectator enjoyment is associated with gambling intention. These findings highlight the power of mediated sport to generate excitement among sports consumers. The findings also provide new knowledge regarding the use of sports-embedded gambling promotion. The progressive use of innovative strategies to increase the perceived enjoyment of XFL spectators when they see live on-screen betting odds during televised XFL games can enhance their gambling intention.

Keywords: innovation, sports, gambling promotion, consumer experience, fan engagement

1. Introduction

Innovation, specifically in relation to technology, has driven the sports industry as of late. Examples include the video assistant referee (VAR) in Premier League football, the development of smart stadiums, and Hawk-Eye line calling in tennis. Global competition among sports and sports leagues has led to further innovative measures in relation to athletes and consumers (Ratten, 2020a). Advances in innovative technologies enrich the way in which sport is consumed by spectators (Szymanski et al., 2020). One such endeavor aiming to further the engagement of sports consumers in the United States is sports betting.

The Professional and Amateur Sports Protection Act of 1992, which effectively banned sports betting throughout the country on a state-by-state basis, was overturned in the United States in May 2018. Since this change in regulations, U.S. sports have begun to identify how to innovate by introducing sports betting (Rishe, 2019). For example, the National Hockey League (NHL) began securing partnerships with the sports betting companies MGM Resorts, FanDuel, and William Hill US shortly after the act was overturned (Schram, 2019).

However, one of the most recent sports leagues to incorporate sports betting is the XFL. The XFL reemerged as a professional football league in February 2020 after a nearly 20-year absence (Fischer, 2020). The most recent XFL season featured an innovative technological approach geared toward fan engagement and sports betting. Live on-screen betting odds were displayed during XFL broadcasts, providing fans with a glimpse of the future of sports betting in North America. Unfortunately for the XFL, the 2020 debut season ended early due to COVID-19, and the league ultimately folded shortly after, announcing that it would return in 2022. Despite this

shortened season, the XFL embraced sports betting as a tool for furthering the fan experience (Harris, 2020). Therefore, it is of interest to study the, albeit short-lived, impact of the XFL's progressive take on offering consumers a sports betting experience. Furthermore, the impact of sports betting innovation on fan engagement in the U.S. sports market has not been examined. Thus, this research contributes to the sports betting literature by examining the relationship between forms of gambling advertisement and gambling behavior (Hing et al., 2013), live on-screen betting odds during televised sport (Hing et al., 2014), and the response to sports-embedded gambling promotion (Hing et al., 2015a). It also contributes to the wider innovation literature by focusing on technological innovation within sport (Ratten, 2020a), and sports consumption through technological advancement (Szymanski et al., 2020). The primary aim of this research is to identify the impact of this innovative technology on the engagement and consumer experience of XFL sports spectators. It does so by analyzing variables related to fans' increased enjoyment and gambling intention. The secondary aim of this study is to establish the relationship, if any, between these variables.

The sports spectator experience (Calabuig et al., 2016) and gambling (Brochado et al., 2018) entail complex behaviors, so this complexity must be embraced. Hence, this study draws on complexity theory and configurational theory, which are built on two principles: equifinality and causal asymmetry. Equifinality suggests that multiple complex configurations of the same conditions can explain the same outcome (Woodside, 2014). Causal asymmetry means that the causes explaining the presence of an outcome are likely to differ from those explaining the absence of the same outcome (Ragin, 2008). Based on these theories, fuzzy-set qualitative comparative analysis (fsQCA) was employed in this research. This method complements traditional symmetrical

analytical tools, adding finer-grained detail about a phenomenon and providing an empirical basis for new theory building. This method can produce surprising findings as part of an abductive approach to theory building (Shepherd & Suddaby, 2017). To address the aforementioned gap in the literature, fsQCA was used to identify different causal patterns of factors influencing increased enjoyment and gambling intention of XFL spectators who used this innovative gambling technology. This approach is supported by complexity theory and configurational theory.

The findings from this study provide new perspectives for both theory and methodology. Specifically, the findings reveal a greater understanding resulting from complex configurations of sports consumer experience (increased enjoyment) and gambling behavior (gambling intention) than from findings from symmetric-based statistical analysis. The results show that when predicting high and low levels of gambling intention and increased enjoyment, different paths can lead to the same outcome. The results thereby support the idea of causal asymmetry. Furthermore, the findings confirm that the configurations leading to low levels of gambling intention or increased enjoyment are not merely the negation of the configurations leading to high levels of gambling intention or increased enjoyment. Hence, the analysis performed in this study offers a more complex view of the factors leading to consumer experience and gambling behavior than symmetric or linear models do. Regarding its methodological implications, this study provides support for the proposals of several authors (Ragin, 2008; Woodside, 2013) who affirm that fsQCA is useful for providing information beyond hypothesis testing using linear methods. In fact, recent studies of gambling behaviors have highlighted the same conclusion (Brochado et al., 2018; Pappas et al., 2019a; Woodside et al., 2015). Our research provides a more nuanced contribution in the field of sports-embedded gambling promotion.

The structure of this paper is as follows. Section 2 presents the theoretical framework of technological innovation within sport and its relation to sports betting and gambling. Section 3 explains the instruments used in the questionnaire and the analysis method (i.e., fsQCA). The results are then presented in Section 4. Finally, Section 5 discusses the results, their relation to the literature, and the overall conclusions of the study.

2. Literature review

With rapid changes in sports-related fields, innovation has become crucial in sports business management (Ratten, 2016; Ratten & Ferreira, 2016; Tjønnndal, 2017). Technological innovation has also significantly affected sports organizations' performance and the sports industry's global competitiveness as a whole (Ratten, 2020a). Benefiting from rapidly evolving computing power, digital transformation has been widely observed in the sports industry. This transformation has taken various forms (Hutchins & Rowe, 2013). For instance, data analysis technologies have been widely used by coaches and managers to analyze game plans and competitors (Davila & Foster, 2015). The sports industry is also a pioneer in adopting virtual reality (VR) and augmented reality (AR) to enhance the fan experience (Goebert & Greenhalgh, 2020; Kunz & Santomier, 2019). Broadcasting channels have also witnessed a series of incremental innovations (e.g., "yellow line" markers) and radical innovations (e.g., live-streaming; Kirton & David, 2013). In summary, technological innovation is transforming not only how sport is created but also how it is delivered, promoted, and consumed (Koronios et al., 2020; Ratten, 2020a). For example, Núñez-Pomar et al. (2016) found that the performance of small firms is more dependent on innovation capacity than that of large firms.

The sports industry is growing and is important socially, professionally, and financially (Escamilla-Fajardo et al., 2019). This importance is due not only to its constant adoption of innovations to stay competitive but also to its cross-sector collaborations. For instance, commercial gambling providers (CGPs) have increasingly been promoting their offerings via sports sponsorship (Danson 2010; Deloitte, 2012; Lamont et al., 2011, 2015). Through this sponsorship, a broad audience and fan base is exposed to gambling products or services while watching broadcasted games (Lamont et al., 2011). Unsurprisingly, more than half of the global online gambling market is due to sports betting (H2 Gambling Capital, 2013).

However, sports gambling is viewed as a significant risk in leading to problem gambling, which can have harmful consequences for individuals and the wider community (Neal et al., 2005). Moreover, despite the lucrative revenue of gambling sponsorship, sports organizations are also under pressure to balance the potential negative influence of their business decisions on society (Lamont et al., 2015). Such social and ethical considerations make it particularly important to understand the potential impact of gambling advertising to reach informed decisions.

Our research is timely because live on-screen betting odds technology was incorporated into XFL games in its first season (2020). This innovative technological approach is geared toward fan engagement and sports betting. The introduction of live on-screen betting odds during XFL broadcasts provides fans with a glimpse into the future of sports betting in North America. Generally, sponsors (commercial gambling providers in this case) expect the increased gambling intention of viewers to generate a positive return on their investment, particularly for match

broadcasts (Lamont et al., 2011). The XFL is a small league with a limited fan base and budget. Therefore, the XFL league organizers seek an enhanced spectator experience to sustain and potentially grow their business. Contrary to such immediate expectations, little is known about the effect that such an approach will have on the fan experience, including fans' gambling intention. Thus, this research investigates the impact of live on-screen betting odds on sports spectators' enjoyment and gambling intention. The study also sheds light on the relationship between these two variables. The following section discusses the theoretical underpinnings of the research and develops the proposals.

2.1. Perceived enjoyment

As conceptualized by Davis et al. (1992), perceived enjoyment is the extent to which consumers regard using technology to be enjoyable on its own in addition to any functions it may offer. Perceived enjoyment has since been regarded as a key factor in influencing consumers' technology acceptance level, particularly for entertainment systems (Chinomona, 2013; Su & Zhang, 2006). Various studies have investigated the impact of perceived enjoyment on consumers' adoption intention in contexts such as gambling, mobile gaming, news headlines, sports updates, and financial information (e.g., Chinomona, 2013; Hong & Tam, 2006). In particular, gambling intention and adoption have been found to be positively associated with perceived enjoyment (Gillespie et al., 2007).

In the context of mediated sports, broadcasters are actively involved in adopting technological innovations to enhance the viewer's experience (Cummins et al., 2012). From a media influence perspective, positive emotional feelings while watching multimedia broadcasting can greatly

influence consumer enjoyment (Hino, 2015). Therefore, sports viewing enhancement technologies are expected to provide spectators with an improved viewing experience and hence improve their level of enjoyment. Thus, we propose that the degree of perceived enjoyment of the live on-screen betting odds may also affect consumers' gambling intention. Thus, the following proposal is made:

- **Proposal 1:** The perceived enjoyment of sports spectators when they see live on-screen betting odds while watching the XFL is related to increased enjoyment and high levels of gambling intention.

2.2. Problems of gambling promotion

The promotion of gambling during televised sport has raised context-specific concerns. Such concerns include normalizing gambling behavior, encouraging the younger population to gamble, and worsening the gambling problem in general (Hing et al., 2014; Lamont et al., 2016; Lopez-Gonzalez et al., 2017; Pitt et al., 2016). For instance, television viewers and sports fans often include children and teenagers, as well as at-risk and problem gamblers. Exposing such groups to gambling-related advertisements may lead to public health issues (Lamont et al., 2011). For example, problem gamblers have been found to have a stronger association with sports-embedded promotion than non-problem gamblers (Hing, Lamont, Vitartas and Fink, 2015b).

Despite the concerns over increased sports-embedded gambling promotion, there is a lack of research on how sports viewers react or respond to such promotion (David et al., 2020; Lamont et al., 2016; Roderique-Davies et al., 2020). The first studies in this field include the qualitative research by Lamont et al. (2016), who identified positive, negative, and neutral responses. For instance, some viewers associate gambling promotion with arousal, optimism, excitement, and joy,

whereas others associate it with worry and anger. Neutral responses are mostly associated with non-sports bettors (Lamont et al., 2016). In other words, the impact is unclear and depends on a range of factors such as the characteristics of the viewers and the way the promotion is embedded.

As a new way of promoting gambling, live on-screen betting odds remains an unknown in terms of whether such perceptions have any relationship with perceived enjoyment or gambling intention and what form this relationship might take. Consequently, the following proposal is made:

- ***Proposal 2:*** Perceived gambling problems for society when sports spectators see live on-screen betting odds during XFL games are not related to increased enjoyment or high levels of gambling intention.

2.3. Gambling outcome expectancies

Research has shown that gambling behavior is motivated by a range of factors such as monetary rewards and emotions (Flack & Morris, 2016). As a fundamental part of the money mediation model, perceiving gambling as a way to earn money is a key indicator of gambling behavior (Lee et al., 2007). From a non-monetary perspective, gambling to boost a positive mood (e.g., measured as excitement) and gambling to divert attention from a negative mood (e.g., measured as escape) are the two most commonly used emotional motives (Flack & Morris, 2015). Various studies (e.g., Jacobs, 1986; Rockloff & Dwyer, 2006; Walter & Contri, 1998) have also suggested that gambling behavior is associated with enhanced feelings of self-importance and self-worth (e.g., measured as ego). The fourth emotional factor is gambling as a means of socialization, enabling networking with others (Thomas et al., 2013). Flack and Morris (2015) showed that the Gambling Outcome

Expectancies Scale (GOES), which includes both monetary and emotional motivations, provides a suitable way of understanding gambling intention and behavior.

In the context of sports, much of the academic literature cites economic gains as a possible motive for sports-related consumption by fans (Korgaonkar & Wolin, 1999; Wann, 1995; Wolfradt & Doll, 2001). Financial rewards offered by sports-related activities such as gambling and sports betting are the main motives for certain people to be actively involved in sports activities (Wann, 1995). However, people who are highly motivated by financial gains may not be identified as sports fans because their actions are not influenced by factors such as supporting a particular team or player (Wann, 2008). In the context of live on-screen betting odds, consumers motivated by economic gains or non-economic gains may perceive and react differently. Therefore, it is important to establish whether fans are motivated by economic gains in gambling and sports betting activities.

The empirical research has also investigated the enjoyment of mediated sports as a function of content and structure, studying the properties of the events (e.g., Bryant et al., 1981), characteristics of the audience (e.g., Gantz & Wenner, 1991), and broadcasting package (Cummins et al., 2012). For instance, the enjoyment of mediated sports is associated with emotional arousal, including excitement, escape, and social bonds (Billings & Ruihley, 2013; Raney, 2012). It can be deduced that the factors influencing gambling intention and enjoyment are similar. Moreover, the added appeal of gambling can be viewed as a way of increasing the audience's enjoyment. Thus, the GOES can also be used to predict enjoyment when watching XFL games. As the XFL only ran for a season in early 2020, there was little chance for members of the audience to form strong ties

with particular teams or players. Therefore, we adopt a parsimonious approach, including only excitement and escape to measure emotional factors. Thus, the following proposals are made:

- **Proposal 3:** Excitement expectancy of XFL spectators is related to increased enjoyment and high levels of gambling intention.

- **Proposal 4:** Escape expectancy of XFL spectators is related to increased enjoyment and high levels of gambling intention.

- **Proposal 5:** Money expectancy of XFL spectators is related to increased enjoyment and high levels of gambling intention.

2.4. Personal innovativeness in information technology

Personal innovativeness in information technology (PIIT) refers to the tendency to be proactive and forward-looking in terms of adopting new technologies (Parasuraman, 2000). The adoption of an innovative technology is associated with consumers' PIIT (Agarwal & Prasad, 1998; Lu et al., 2005; Thakur & Srivastava, 2014). Thus, people who are more comfortable and positive in trying new technologies are more likely to adopt new technology with ease (Goebert & Greenhalgh, 2020). We propose that such people tend to be associated with higher enjoyment when watching sports broadcasts.

PIIT also has a strong positive impact on the perceived usefulness and perceived ease of use of a new technology (Lu et al., 2005). According to the technology acceptance model (TAM; Davis et al., 1989), perceived usefulness and perceived ease of use are positively related to attitudes toward using technology. This attitude leads to higher technology adoption intentions. Sports-embedded gambling advertising triggers gambling urges, although the influence differs in different groups

such as problem gamblers versus non-problem gamblers (Hing et al., 2014). Thus, for live on-screen betting odds during XFL games, we propose a positive association between PIIT and gambling intention. Thus, the following proposal is made:

- **Proposal 6:** The personal innovativeness of XFL spectators is related to increased enjoyment and high levels of gambling intention.

2.5. Increased perceived enjoyment and gambling intention

Purchase intention has long been considered the last step of actual purchase behavior in marketing research, and it serves as a predictor (Konietzny et al., 2018). In a gambling context, purchase intention can be recontextualized as gambling intention. As discussed above, it is unclear whether viewers will respond to sports-embedded gambling promotion in a positive, negative, or neutral way (David et al., 2019; Lamont et al., 2016; Roderique-Davies et al., 2020). However, as indicated by Lamont et al. (2016), many non-sports bettors report that embedding gambling in “healthy” sports activities can help portray it as harmless and engaging. Live on-screen betting odds can also contribute to creating a sense of urgency. Such a positive image can in turn promote gambling intention among non-sports bettors. In comparison, those who view sports-embedded gambling promotion as harmful are likely to have a lower level of gambling intention. Therefore, the following proposal is made:

- **Proposal 7:** The increased perceived enjoyment of XFL sports spectators is related to gambling intention.

2.6. FsQCA, complexity theory, and configurational theory

The factors discussed so far interact with each other in multiple ways. Most studies have used symmetric methods (structural equation modeling and multiple regression analysis) to measure the

effects of these factors on spectators' experiences and gambling behavior. These symmetric methods are based on theories of variance, in which a predictor variable must be both necessary and sufficient to achieve a given outcome (Pappas et al., 2019a). Focusing only on symmetric and net effects may be misrepresentative because these effects do not necessarily apply to all cases in the data set (Ragin, 2008; Woodside, 2014). To address this gap in the literature, this study uses the fuzzy-set qualitative comparative analysis (fsQCA), which is based on complexity theory and configurational theory.

FsQCA uses Boolean logic instead of correlation to establish the causal conditions related to a specific outcome (Ragin, 2008; Ragin & Fiss, 2008). This analytic technique combines both quantitative and qualitative aspects (Ragin, 2000). This configurational approach is based on the analysis of sufficient and necessary conditions (Roig-Tierno et al., 2017). This technique initially focused on small samples. However, it has since been applied to larger data sets. FsQCA has attracted more research attention than other variants of qualitative comparative analysis (Roig et al., 2017). The results of the fsQCA analysis are more detailed and describe greater complexity than regression analysis or structural equation modeling (Vis, 2012). FsQCA also offers a more systematic way of analyzing complex causality and logical relationships between causal conditions and an outcome than linear models (Legewie, 2013).

This method is based on complexity theory and configurational theory. It uses an inductive research method based on the principles of conjunction, equifinality, and causal asymmetry (Misangyi et al., 2017). Gigerenzer (1991) underlined the value of complexity by highlighting that it is too simplistic to think that high outcomes of Y are associated only with high outcomes of X,

as conventional linear models do. In this stream of complexity theory, Byrne (2005) noted that causal processes in complex systems cannot be retrieved by simple or linear analysis. Moreover, Woodside et al. (2015) stated that the trajectories of complex systems are always directed by complex and contingent causes. Depending on the configuration, both high and low scores of X can lead to high outcomes of Y. Similarly, Ragin (2008) showed that, under the diversity-oriented view, causes combine in different and sometimes contradictory ways to achieve the same outcome (equifinality). Thus, equifinality indicates the existence of multiple, equally effective ways to achieve the same outcome.

Conjunction means that the antecedent conditions within a configuration operate interdependently with each other, rather than discretely (Douglas et al., 2020). Thus, in fsQCA, all the antecedent conditions may interact interdependently with each other, presenting combinations of conditions that could be sufficient for the outcome of interest. Finally, within causal asymmetry, conditions that are related to the outcome in one configuration may not be related (or may even be inversely related) in another configuration associated with the same outcome (Meyer et al., 1993). For these reasons, fsQCA was used in this study to investigate XFL spectators' experiences and gambling behavior.

Gambling is a complex behavior. A wide range of potentially iterative factors contribute to gambling intention and participation (Casey et al. 2011; Dickson et al., 2002; el-Guebaly et al., 2008). For instance, Moore and Ohtsuka (1999) and Hing et al. (2013) found that attitudes and social norms, when combined, can predict gambling intention. Flack and Morris (2015) also showed that a range of motivational factors must be considered to explain behavior. Indeed,

emotional factors such as escape, excitement, and social norms have a stronger association than monetary motivation (Flack and Morris, 2015). Similarly, spectator behavior is also complex. A range of factors have been used to predict involvement and enjoyment (Hino, 2015; Lamont et al., 2016). Economic gain has long been considered a possible motive for sports fans to behave in a certain way and can potentially influence their enjoyment (Wann 1995). Raney (2012) and Billings and Ruihley (2013) found that the enjoyment of mediated sports is associated with emotional factors such as excitement, escape, and social bonds. Thus, it is important to take these variables in combination as opposed to in isolation when studying gambling behavior and spectator enjoyment.

Moreover, live on-screen betting odds is a new form of innovative technology, and PIIT has been found to be associated with consumer adoption (Agarwal & Prasad, 1998; Lu et al., 2005; Thakur & Srivastava, 2014). Therefore, we argue that PIIT is likely to influence gambling behavior and spectator enjoyment in combination with the other factors discussed earlier (see Sections 2.1 to 2.5).

3. Method

3.1 Sample

As a brand new league with a limited fan following, the XFL has a community of spectators that is difficult to reach as respondents. Therefore, a small sample was used. Non-probability snowball sampling (Li et al., 2015) was conducted to reach the intended community of XFL spectators. The sample comprised 47 spectators of XFL games from the United States. Of these spectators, 83% were male, and 17% were female. The mean age was 27.79 (SD = 8.67). Within the sample, 93.60%

of fans had friends who usually gambled, and 6.40% did not have friends who gambled. Table 1 gives further details of the sample.

-----Insert Table 1 here-----

3.2 Instrument

A questionnaire consisting of several scales was used to gather data for this research. The questionnaire comprised the following scales:

- *Gambling intention (GI) scale*: This scale was adapted from Konietzny et al. (2018). It has three items that measure the intention to bet online on sports in the coming months. Two relate to the intention of using gambling betting platforms in the coming months (e.g., I intend to use sport gambling platforms in the next month). The third relates to the intention to gamble online in the coming months (e.g., I predict that I will gamble on sport in the near future).

- *Personal innovativeness in information technology (PIIT) scale*: This scale was taken from Wang et al. (2012). It has four items that measure the attitude and propensity to use new technologies (e.g., If I heard about a new information technology, I would look for ways to experiment with it).

- *Perceived enjoyment (PE) scale*: This scale was adapted from Wang et al. (2012). It is made up of four items that measure whether an individual views gambling as a fun and enjoyable activity. Specifically, the items refer to perceptions of gambling as enjoyable, exciting, pleasant, and interesting (e.g., Seeing live on-screen betting odds while I am watching an XFL game is enjoyable).

- *Gambling Outcome Expectancies Scale (GOES)*: This scale was taken from Flack and Morris (2015). It has several dimensions, three of which were used in this study: excitement, escape, and money. The first uses three items to measure whether people perceive sports betting as exciting

(e.g., Gambling is about enjoying intense feelings). The second has four items that measure whether people perceive sports betting as a way to escape from everyday life (e.g., Gambling can help you clear your mind), relax (e.g., Gambling is the best way to relax), and forget about everyday problems (e.g., Gambling is a way to forget everyday problems). The third dimension has three items referring to the perception of sports betting as a way of making money (e.g., Gambling is a way to win big money immediately).

- *Promotion of gambling and live on-screen betting odds during televised sport scale*: This scale was adapted from Hing et al. (2014). Three of its items related to the positive experience of live on-screen betting odds during televised sport (e.g., it increases my enjoyment of watching sport). The other three items related to problems that may be aggravated by live on-screen betting odds during televised sport (e.g., It will increase gambling problems in the United States).

Finally, five sociodemographic attributes were captured by the questionnaire: gender, age, household income, whether the fan has ever gambled on sport, and whether the fan has friends who gamble.

3.3 Common method bias

To ensure that the sample was free from common method bias, the language of the questionnaire items was kept as simple as possible. Double-barreled questions were avoided. Variables were also explained before their measurement items to create psychological separation in the minds of respondents (Podsakoff & Organ, 1986). Two post hoc tests were conducted to assess common method bias, namely Harman's single factor (Podsakoff & Organ, 1986) and the full collinearity test (Kock, 2015).

First, Harman's single factor test was performed to test statistically whether the variance explained by all 24 observed items under one single factor was below 50%. The explained variance was 33.25%. This percentage was well below the threshold, implying that the study was not affected by common method bias (Podsakoff & Organ, 1986). Second, full collinearity assessment was performed. A variance inflation factor (VIF) greater than 3.30 is considered an indicator that there is collinearity and that the data may be contaminated by common method bias. Therefore, data may be considered free from common method bias only if the VIFs resulting from the test are less than or equal to 3.30 (Kock, 2015). All VIFs were less than 3.30, implying that this study was not affected by common method bias.

3.4 Procedure

The questionnaire was administered using Lime survey. A link to the questionnaire was sent to XFL sports spectators by email. It was also posted on social media (Facebook, Twitter, and LinkedIn). The two requisites to participate in the study were being an XFL spectator and being aged 18 years or older. The voluntary nature of the questionnaire was stated at all times, as was the anonymity of the collected data. Data collection took place from April to June 2020, following the conclusion of the XFL season.

3.5 Data analysis

Qualitative comparative analysis (QCA) was developed for small samples (Tho & Trang, 2015). It is suitable for our sample size. Fuzzy-set qualitative comparative analysis (fsQCA) studies the causality between all logically possible combinations of conditions and a specific outcome

(Sereikhuoch & Woodside, 2012). This method also considers equifinality, where different paths lead to a certain outcome (Prado-Gascó & Calabuig, 2016). This method is based on the conjecture that the influence of a particular condition on a specific outcome depends on its combination with other conditions, not on the individual level of that condition.

First, all missing data were deleted. Raw data responses were then transformed into fuzzy-set responses. To calculate all conditions, the item scores were multiplied. The next step was to recalibrate the conditions with values between 0 and 1. To recalibrate variables with more than two values (continuous variables), three thresholds are necessary. The first (0) captures the idea that an observation with this value is fully outside the set (low levels). The second (.50) represents a mid-point that is neither inside nor outside the set (intermediate levels). The last value (1) corresponds to observations that are fully inside the set (high levels). The literature recommends the 10th, 50th, and 90th percentiles for the thresholds (Woodside, 2013). The continuous variables were thus recalibrated using the following three thresholds: 10th percentile (low levels), 50th percentile (intermediate levels), and 90th percentile (high levels).

After calibration, analyses of necessary and sufficient conditions were performed. These analyses were used to evaluate the effect of different conditions (constructs) on high and low levels of perceived spectator enjoyment and gambling intention. A condition is necessary when it must always be present (or absent) for the existence of a specific outcome. Ragin (2008) suggests that a necessary condition must have a consistency score of more than .90. A sufficient condition is one that can lead a particular outcome. However, this specific outcome can also be attained by other paths or combinations of conditions. The analysis of sufficient conditions in fsQCA has two stages

(Sereikhuoch & Woodside, 2012). First, a truth table algorithm converts the fuzzy-set membership scores into a truth table. Then, the solutions are ordered by raw consistency. The consistency threshold can then be selected by observing large breaks in consistency values in the truth table (Schneider et al., 2010). The frequency threshold refers to a cut-off value used to select the number of cases that must be associated with a configuration (i.e., a combination of conditions) for that configuration to be considered (Beynon et al., 2018). A frequency threshold of 1 is acceptable, particularly when the aim is to construct theory from a small sample (Ragin, 2006). Fainshmidt (2020) suggests that a frequency threshold of 1 is suitable for small-to-medium sample sizes. However, the frequency threshold is generally higher for larger samples. Given the small size of our sample ($n = 47$), a threshold of 1 observation was chosen. Accordingly, any configuration corresponding to at least one case in the data was considered.

Second, fsQCA provides three solutions: complex, parsimonious, and intermediate. The intermediate solution was used in this study, as advocated by Ragin (2008). In these solutions, coverage indicates the proportion of cases in the sample that share a particular configuration. The raw coverage for each configuration is analogous to the coefficient of determination (R^2) in regression analysis (Douglas et al., 2020). Hence, to choose the most important configurations (i.e., those with the greatest explanatory capacity), the raw coverage is used (Villanueva et al., 2017).

SPSS (Statistical Package for the Social Sciences, Version 24) and fsQCA 2.0 software were used. SPSS was used for the descriptive analyses of the variables (mean, standard deviation, scale averages, minimum and maximum values, and percentiles) and the correlation analysis. Given the non-normality of the data, Spearman's correlation analysis was also performed to quantify the

relationship between increased spectator enjoyment and gambling intention. Finally, fsQCA 2.0 was used to perform the other analyses.

4. Results

The first step was to test whether any causal conditions were necessary for the presence or absence (~) of the outcomes of increased spectator enjoyment and gambling intention. The second step was to test the sufficient conditions. To analyze the sufficient conditions in the truth table, a threshold was established based on a break in the distribution of the consistency scores (Schneider et al., 2010). Ragin (2008) recommends a minimum consistency threshold of .75. Table 2 presents the descriptive statistics for the variables and the calibration values used to convert them into fuzzy-set conditions.

-----Insert Table 2 here-----

4.1. Causal conditions leading to increased spectator enjoyment

4.1.1. Necessary conditions

In Table 3, the results of the analysis of necessary conditions for increased spectator enjoyment are presented. No necessary conditions were found for either increased spectator enjoyment or the absence of increased spectator enjoyment (written “~increased spectator enjoyment”). All consistency values were lower than .90. Hence, they did not exceed the minimum threshold recommended by Ragin (2008).

-----Insert Table 3 here-----

4.1.2. Sufficient conditions

For the intermediate solution, the presence of all conditions, except gambling problems, was expected to lead to the presence of high levels of increased spectator enjoyment. The frequency cut-off in the truth table was set to 1, and the consistency cut-off was set to .80. The intermediate solution consisted of two causal configurations (combinations of conditions) that explained 61% of the cases of increased spectator enjoyment (consistency = .85; raw coverage = .64).

Table 4 shows that the most important combination for increased fan enjoyment was high levels of perceived enjoyment*high levels of excitement expectancy*high levels of escape expectancy (consistency = .89; raw coverage = .54). The second most important condition was high levels of perceived enjoyment*high levels of excitement expectancy*high levels of personal innovativeness in information technology (consistency = .87; raw coverage = .51). These two solutions explained 54% and 51% of the variation in high levels of increased spectator enjoyment.

The notation employed by Ragin and Fiss (2008) and Fiss (2011) is used to present the results. Black circles indicate the presence of a condition, and white circles indicate the absence of a condition.

-----**Insert Table 4 here**-----

The sufficiency analysis for low levels of increased spectator enjoyment was then performed. The threshold was .80. This value was higher than .74, as recommended by Ragin (2008). Two solutions were able to explain 87% of the cases with the absence of increased spectator enjoyment (consistency = .87; coverage = .78). The most important configuration for the absence of increased spectator

enjoyment was low levels of perceived enjoyment (consistency = .81; raw coverage = .85). The second most important configuration was low levels of escape expectancy*low levels of money expectancy*low levels of personal innovativeness in information technology (consistency = .80; raw coverage = .47). These solutions explained 85% and 47% of the variation in low levels of increased spectator enjoyment.

4.2. Causal conditions leading to gambling intention

4.2.1. Necessary conditions

Table 5 shows the results of the analysis of necessary conditions. No necessary conditions were found for either gambling intention or absence of gambling intention (written “~gambling intention”). All consistency values were lower than .90. Hence, they did not exceed the recommended minimum threshold of 0.90 (Ragin, 2008).

-----**Insert Table 5 here**-----

4.2.2 . Sufficient conditions

For the intermediate solution, the presence of all conditions, except gambling problems, were expected to lead to the presence of betting intention. The frequency cut-off in the truth table was set to 1, and the consistency cut-off was set to .81. The intermediate solution consisted of three causal configurations (i.e., combinations of conditions) for the outcome of betting intention.

An fsQCA model is informative when consistency exceeds a certain threshold (Eng & Woodside, 2012). The overall coverage (.62) and consistency (.83) values of the three sufficient

configurations were acceptable. Sufficient conditions explained 62% of the empirical cases of betting intention (Woodside, 2014). Moreover, the three sufficient conditions had acceptable values of raw coverage, which was between .25 and .65 (Eng & Woodside, 2012). The notation used by Ragin and Fiss (2008) and Fiss (2011) is used to present the results. Black circles indicate the presence of a condition, and white circles represent the absence of a condition.

-----**Insert Table 6 here**-----

The causal configurations for the presence of gambling intention were high levels of perceived enjoyment*high levels of excitement expectancy*high levels of escape expectancy (raw coverage = .51; consistency = .85). The second most important solution was high levels of perceived enjoyment*high levels of excitement expectancy*high levels of personal innovativeness in information technology (raw coverage = .45; consistency = .85). The last configuration was positive perception of perceived enjoyment*low perceptions of gambling problems*high levels of excitement expectancy*high levels of money expectancy (raw coverage = .35; consistency = .92).

Conversely, the absence of all conditions, except gambling problems, was expected to lead to the absence of gambling intention (intermediate solution). The frequency cut-off in the truth table was set to 1, and the consistency cut-off was set to .81. The intermediate solution consisted of four configurations that explained 91% of cases (coverage = .91; consistency = .75). The configuration with the highest explanatory capacity was low levels of perceived enjoyment (raw coverage = .86; consistency = .79). The second most important configuration was low levels of money expectancy*low levels of excitement expectancy*low levels of personal innovativeness in

information technology (raw coverage = .47; consistency = .78). The third solution was low levels of gambling problems*low levels of money expectancy*high levels of personal innovativeness in information technology (raw coverage = .32; consistency = .87). The final configuration was high levels of gambling problems*high levels of money expectancy*low levels of personal innovativeness in information technology (raw coverage = .26; consistency = .84).

4.3. Correlation between increased enjoyment intention and gambling intention

Finally, correlation analysis was performed to understand the relationship between increased spectator enjoyment and gambling intention. The results of this analysis show that these two behaviors are significantly correlated ($r = .45$; $p < .01$), as shown in Table 7:

-----Insert Table 7 here-----

5. Discussion and conclusions

Innovation plays an important role in the sports industry. As sport continues to evolve, so do its spectators. Advances in innovative technologies help keep sport competitive. In doing so, they alter the way in which sport is consumed. From an entrepreneurial perspective, innovation involves thinking and acting creatively to fill a gap in the market (Ratten, 2020b). The XFL recognized a potential market gap in relation to the advertising of sports betting in U.S. sports leagues. The introduction of live on-screen betting odds during game broadcasts offers a clear example of such innovation. The primary aim of this study was to discover what configurations of conditions increase spectator enjoyment and lead to high levels of gambling intention. The secondary aim

was to discover whether there is a relationship between increased spectator enjoyment and high levels of gambling intention.

Our findings show that the perceived enjoyment of consumers when seeing live on-screen betting odds during XFL games is an important condition for increased spectator enjoyment and gambling intention. These results are consistent with those of Hino (2015) and Gillespie et al. (2007), who highlight the importance of perceived enjoyment in these two consumer behaviors. Furthermore, there was a perceived expectation of increased levels of excitement among consumers when gambling, in addition to increased spectator enjoyment and overall gambling intention. For consumers to exhibit an increase in spectator enjoyment and to have a greater intention to gamble while watching XFL broadcasts, it is important for them to expect higher levels of escape when gambling. This finding is in line with those of Flack and Morris (2015), who showed that gambling to divert attention from a negative mood is one of the most common reasons to watch televised sports. This finding also highlights the power of mediated sport as a way of providing excitement for sports consumers (Billings & Ruihley, 2013; Raney, 2012), in this case through sports gambling. Gambling is believed to help deliver higher levels of escape. Hence, sports spectators who share this perception should enjoy the XFL league more thanks to the inclusion of live on-screen betting odds.

Higher levels of comfort and familiarity with innovative technologies is an important factor for increased spectator enjoyment and higher gambling intention during XFL broadcasts. This finding is aligned with the views of Ratten and Ferreira (2016) regarding usage within new innovative entrepreneurial endeavors.

Nevertheless, it is the combinations of conditions and not individual conditions in isolation that lead to the outcomes of increased spectator enjoyment and gambling intention. Specifically, to achieve increased sports spectator enjoyment and high levels of gambling intention, the solution with the most explanatory capacity is XFL sports spectators with high levels of perceived enjoyment when seeing live on-screen betting odds during XFL games and with high levels of excitement and escape expectancy when gambling. Hence, the XFL's idea to broadcast live on-screen betting odds during games is perceived as enjoyable by consumers, with gambling being viewed as a means of excitement or escape as opposed to a way to earn money.

The configurations and data reflect the complexity of the findings. Binde (2013) reported that gambling behavior may be influenced by a wide range of motivations. Our literature review (Brochado et al., 2018; Flack & Morris, 2015) suggests that multiple combinations of variables affect gambling behavior. Therefore, varying combinations of those variables may exist for different individuals. The fsQCA analysis highlights the most relevant combinations of behavior.

It is important to highlight the recipes or conditions leading to the outcomes. Two configurations lead to increased spectator enjoyment. The first set of conditions for increased spectator enjoyment is perceived enjoyment, excitement expectancy, and escape expectancy. The second configuration leading to increased spectator enjoyment consists of perceived enjoyment, excitement expectancy, and personal innovativeness in information technology. Escape expectancy and personal innovativeness in information technology were each identified once. By contrast, perceived enjoyment and excitement expectancy appeared in both configurations. Money expectancy was not identified as a condition for increased spectator enjoyment.

Three configurations lead to gambling intention. The first configuration consists of perceived enjoyment, excitement expectancy, and escape expectancy. The second configuration shows that the combination of perceived enjoyment, excitement expectancy, and personal innovativeness in information technology is positively related to gambling intention. Finally, the third configuration consists of perceived enjoyment, a lack of problems associated with gambling, excitement expectancy, and money expectancy. Escape expectancy, money expectancy, and personal innovativeness in information technology were identified only once. By contrast, perceived enjoyment and excitement expectancy were identified in each of the three configurations. Therefore, escape expectancy, money expectancy, and personal innovation technology are less strong conditions for gambling intention when watching XFL games.

For low levels of increased spectator enjoyment and gambling intention, a low level of perceived enjoyment has the greatest explanatory capacity. Moreover, to have high levels of gambling intention, weak perceptions of gambling as a harmful or problematic activity are necessary. One such harmful perception is gambling addiction (Lopez-Gonzalez et al., 2019). However, in the case of increased spectator enjoyment, gambling addiction does not seem to be a condition.

The variables presented in the questionnaire were designed to be mutually exclusive. For example, questions on monetary variables were designed to be mutually exclusive of those on social variables (e.g., excitement and enjoyment) or technological skills. Perceived enjoyment and excitement expectancy can also be considered mutually exclusive. Questions on perceived enjoyment primarily related to the behavior of fans watching an XFL game. By contrast, questions on excitement expectancy primarily related to the gambling behavior of those watching XFL games.

The combinations of variables and configurations can be attributed to the varying characteristics of the sample. Because sports betting recently became legal in the United States and remains illegal in many states, consumers may currently view sports betting as an exciting new component of spectator sport. Therefore, they might not focus on gambling for monetary reasons. This argument is consistent with the assertions of Brochado et al. (2018), who stated that monetary winnings are not the main motive for gambling. The XFL was a newly formed league, taking place a time when other forms of football were not present. Accordingly, football fans were likely to watch the sport irrespective of sports betting promotions. The literature suggests that the reasons for gambling differ across population subgroups (Francis et al., 2015). XFL viewers may be considered a new subgroup, which would explain why perceived enjoyment and excitement were consistent in all recipes.

The configurations may evolve as sports betting becomes more accepted in U.S. sport. As sports betting legalization spreads throughout the country, money expectancy may become a stronger condition for gambling intention.

Finally, the two outcomes are related. By increasing the perceived enjoyment of sports spectators, their gambling intention will also increase and vice versa. This finding is in line with those of Lamont et al. (2016), who reported that embedding gambling in “healthy” sports activities can help portray it as a harmless and interesting activity.

In conclusion, innovative technological advances in the sports industry are essential and can help strengthen fan engagement and promote consumer behavior. For the XFL, whose debut season ended abruptly in 2020, there is new hope. At the time of writing this article, a group of investors, including Dwayne “The Rock” Johnson, have agreed to purchase the XFL (Mather, 2020). For

current U.S. sports league executives, and future XFL league executives, offering live on-screen sports betting during game broadcasts may provide an attractive technological service that helps enhance the spectator experience. Our research suggests that understanding how best to market the impact of live on-screen sports betting odds through specific customer profiles could benefit sports leagues. League executives could align their marketing strategies with different audiences based on the multiple recipes identified earlier to increase spectator enjoyment and gambling intention. League executives looking to increase spectator enjoyment should focus on two distinct recipes. A specific marketing strategy could thus be implemented to enhance perceived enjoyment, excitement, and escape (first configuration).

For betting companies looking to partner with U.S. leagues, our research shows that the perceived enjoyment of sports spectators increases with their intention to gamble. Therefore, a specific marketing strategy could focus on increasing gambling intention. Our research identified three recipes for increasing gambling intention. Accordingly, league executives could focus their marketing efforts on any of these three. They could thereby create specific customer profiles on which to focus differentiated marketing efforts.

Future collaborations between U.S. sports leagues and betting companies could be mutually beneficial. Hence, a practical extension of this research might be for the XFL or for other leagues in the United States to adopt such a practice in the future. They could collaborate with a betting company and broadcast live on-screen betting odds during games to increase spectator enjoyment and hence gambling intention.

As these leagues look to collaborate with betting companies and focus their marketing efforts on specific gambling consumer profiles, they should also focus on the ethical implications of such efforts. There is a responsibility to encourage ethical gambling and for leagues and the betting companies alike to understand and appreciate the impact gambling advertisements can have on consumers.

More research on this topic, specifically in the United States, is needed. The XFL is set to return in 2022 (XFL, 2020), presenting the opportunity to study the impact of live on-screen betting odds throughout an entire season. Future longitudinal studies tracking the progress of sports betting in the United States, along with comparative studies with other sports leagues in the United States or abroad, would also be beneficial to understand the impact of live on-screen betting odds on spectator enjoyment.

Lastly, it is important to note the limitations of this research. With regards to the sample, the community of XFL spectators is difficult to reach. Therefore, the sample was small. However, fsQCA works well with small samples (Núñez-Pomar et al., 2016). Non-probability snowball sampling (Li et al., 2015) was conducted to reach the community of XFL spectators. The sampling method reflects the challenges associated with reaching the sample. This approach can lead to potential sample bias, and it may not be indicative of the entire population. In addition, restrictions also arose due to the cross-sectional nature of the data, which were collected only once between April and June 2020. There was also potential bias as a result of the sampling method and the sample size. Therefore, a longitudinal study capturing a larger sample and examining spectators' intention and behavior before, during, and after the season is recommended. Such a study would

enable comparison between the configurational solutions at different times. As online gambling continues to grow, such findings can be used to moderate spectators' behavior.

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Table 1. Sample characteristics

	Variable	Percentage (%)
Gender	Male	83
	Female	17
Sports gambling	Yes	76.60
	No	23.40
Friends who gamble	Yes	93.60
	No	6.40
Household income (\$)	Under 25000	14.90
	25000–49999	14.90
	50000–79999	17.00
	80000–130000	21.30
	Over 130000	19.10
	I prefer not to say	12.80

Table 2. Descriptive statistics and calibration values

	PE	GP	GI	EXE	ESE	ME	PIT	ISE
N	47	47	47	47	47	47	47	47
Mean	124.09	256.70	37.11	33.70	22.38	24.79	87.89	2.34
SD	193.27	396.99	46.79	35.61	48.28	29.88	109.10	1.51
Minimum	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1
Maximum	625.00	1600.00	125.00	125.00	256.00	125.00	625.00	5

Calibration values

Percentiles 10	1.00	1.00	1.00	1.00	1.00	1.00	8.00	1.00
50	32.00	75.00	8.00	24.00	2.00	16.00	72.00	2.00
90	625.00	1008.00	125.00	100.00	77.60	66.20	173.00	5.00

Notes: PE-Perceived enjoyment; GP-Gambling problems; GI-Gambling intention; EXE-Excitement expectancy; ESE-Escape expectancy; ME-Money expectancy; PIT-Personal innovativeness in information technology; ISE-Increased spectator enjoyment.

Table 3. Necessary conditions for increased spectator enjoyment

	Increased spectator enjoyment		~ Increased spectator enjoyment	
	Consistency	Coverage	Consistency	Coverage
Perceived enjoyment	0.74	0.79	0.35	0.49
~Perceived enjoyment	0.52	0.38	0.85	0.81
Gambling problems	0.58	0.60	0.45	0.60
~ Gambling problems	0.62	0.46	0.71	0.69
Excitement expectancy	0.87	0.62	0.64	0.59
~ Excitement expectancy	0.42	0.46	0.58	0.86
Escape expectancy	0.66	0.67	0.42	0.56
~ Escape expectancy	0.56	0.43	0.75	0.74
Money expectancy	0.54	0.55	0.47	0.61
~ Money expectancy	0.61	0.47	0.65	0.65
Personal innovativeness in information technology	0.60	0.60	0.46	0.60
~ Personal innovativeness in information technology	0.60	0.46	0.69	0.69

Table 4. Sufficient conditions (intermediate solution) for increased spectator enjoyment

<i>Cut-off</i> <i>frequency: 1</i>	Increased spectator enjoyment		~ Increased spectator enjoyment	
	<i>Cut-off</i> <i>consistency: .80</i>	<i>Cut-off</i> <i>consistency: .80</i>	<i>Cut-off</i> <i>consistency: .80</i>	<i>Cut-off</i> <i>consistency: .80</i>
	1	2	1	2
Perceived enjoyment	●	●	○	
Gambling problems				
Excitement expectancy	●	●		
Escape expectancy	●			○
Money expectancy				○
Personal innovativeness in information technology		●		○
Consistency	.89	.87	.81	.80
Raw coverage	.54	.51	.85	.47
Unique Coverage	.10	.07	.40	.02
Total solution consistency		.85		.78
Total solution coverage		.61		.87

Note: ● = presence of condition, ○ = absence of condition; Expected vector for increased spectator enjoyment: (1,0,1,1,1,1) (0: absent; 1: present); Expected vector for ~ increased spectator enjoyment: (0,1,0,0,0,0) using the same format as Fiss (2011).

Table 5. Necessary conditions for gambling intentions

	Gambling intention		~ Gambling intention	
	Consistency	Coverage	Consistency	Coverage
Perceived enjoyment	0.73	0.82	0.37	0.49
~Perceived enjoyment	0.55	0.42	0.86	0.79
Gambling problems	0.60	0.66	0.46	0.60
~ Gambling problems	0.63	0.50	0.74	0.69
Excitement expectancy	0.82	0.61	0.65	0.58
~ Excitement expectancy	0.43	0.52	0.56	0.78
Escape expectancy	0.61	0.65	0.45	0.57
~ Escape expectancy	0.60	0.48	0.72	0.69
Money expectancy	0.60	0.63	0.46	0.59
~ Money expectancy	0.61	0.49	0.70	0.68
Personal innovativeness in information technology	0.58	0.61	0.49	0.61
~ Personal innovativeness in information technology	0.62	0.50	0.69	0.66

Table 6. Sufficient conditions (intermediate solution) for gambling intention

<i>Frequency cut-off: 1</i>	Gambling intention				~ Gambling intention			
	<i>Consistency cut-off: .81</i>				<i>Consistency cut-off: .81</i>			
	1	2	3		1	2	3	4
Perceived enjoyment	●	●	●		○			
Gambling problems			○				○	●
Excitement expectancy	●	●	●					
Escape expectancy	●					○		
Money expectancy			●			○	○	●
Personal innovativeness in information technology		●				○	●	○
Consistency	.85	.85	.92		.79	.78	.87	.84
Raw coverage	.51	.45	.35		.86	.47	.32	.26
Unique Coverage	.07	.04	.05		.21	.02	.02	.01
Total solution consistency		.83				.75		
Total solution coverage		.62				.91		

Note: ● = presence of condition, ○ = absence of condition; Expected vector for gambling intention: (1,0,1,1,1,1) (0: absent; 1: present); Expected vector for ~ gambling intention: (0,1,0,0,0,0) using the same format as Fiss (2011).

Table 7. Correlation between increased spectator enjoyment and gambling intention

	Increased spectator enjoyment	Gambling intention
Increased spectator enjoyment	1.00	
Gambling intention	.45	1.00

Note: ***p < .001; **p > .01; *p < .05