The impact of COVID-19 on the European football ecosystem – A Delphi-based scenario analysis

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ABSTRACT

COVID-19 has had a tremendous impact on the world's society and economy. This also applies to European football; the continent's largest professional sports ecosystem has millions of employees in football-related jobs and even more people emotionally attached to the sport. To account for stakeholders' unprecedented level of uncertainty regarding regulatory, economic, social, and technological implications for their business, we systematically examine how COVID-19 will impact the future of the European football ecosystem in the short, medium and long term. We present a Delphi-based scenario analysis with 110 subject matter experts who assessed 15 future projections both on a quantitative and qualitative basis. We find that, for example, a salary cap for players would have the highest impact on the ecosystem, but it is unlikely to be implemented, while an increased awareness for social responsibility would be the most desirable effect of the crisis. To refine the results, we account for surface-level and deep-level characteristics of participants and find significant effects in both cases. We identify three different clusters of projections and discuss the potential threats and opportunities of COVID-19 for the European football ecosystem to contribute to the scientific discussion and to provide guidance for policy- and decision-makers.

1. Introduction

On May 6, 2020, the international daily newspaper *Financial Times* ran the headline "Coronavirus threatens €10 billion hit to football transfer market" (M. Ahmed, 2020). While the transfer market is only one component of the football industry, this headline representatively demonstrates the drastic impact of COVID-19 on the entire ecosystem. As with all other industries, the outbreak of the epidemic disease was unexpected for European football, and it instantly confronted stakeholders with extreme ambiguity in terms of regulatory, economic, social, and technological consequences.

Especially in the period between March and May 2020, managers and authorities had to make directional decisions despite a maximum degree of uncertainty (Parnell et al., 2020). For example, governing bodies such as associations and leagues had to decide on a potential continuation of sports competitions; thus, on March 17, the Union of European Football Associations (UEFA) decided to postpone the 2020

UEFA European Football Championship by 12 months (UEFA, 2020b). Similarly, most national leagues decided to interrupt their domestic match schedules until further notice, particularly to avoid large gatherings and the potential risks associated with travel activities (Nakamura and Managi, 2020; Ozili and Arun, 2020; Tovar, 2020). While postponements of sports competitions were largely inevitable from a health perspective, associations and leagues simultaneously had to deal with further challenges, such as re-start strategies or broadcasting compensations (Q. A. Ahmed and Memish, 2020; Reade et al., 2020c). However, other stakeholders of the European football ecosystem were also heavily affected by the consequences of COVID-19. Clubs faced financial threats because matchday, and sponsoring and broadcasting revenues were at risk, while player and employee contracts remained in place (Duarte Muñoz and Meyer, 2020; Fühner et al., 2020). Coaches and managers, in turn, had to ensure the physical and mental fitness of their players to be prepared for a possible continuation of competitions under aggravated conditions such as extended health precautions or

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games behind closed doors (Mohr et al., 2020).

Given the complexity of the situation, our study aims to identify and assess possible short-, medium-, and long-term effects of COVID-19 on the European football ecosystem. Taking into account different stakeholder perspectives, we asked subject matter experts from different countries, backgrounds, and occupations to evaluate the expected probability, desirability, and impact of possible future developments. Using both qualitative and quantitative survey data, we elaborate on different viewpoints and reasons for dissent regarding the consequences of the pandemic to better understand diverging views within the industry (Warth et al., 2013). Moreover, we enrich these findings by additionally investigating the experts' sentiments to account for the fact that their mood during the lockdown may affect valuation behavior (Loye, 1980). Finally, we aggregate our findings in fuzzy clustered scenarios and reflect on their practical implications (Curry, 2007; Wilkinson, 2009).

Our study contributes to the existing body of research by providing a comprehensive and multifaceted view of the possible effects of the COVID-19 pandemic on the European football ecosystem. While scholars have mostly offered theoretical considerations on subareas of the football industry thus far (Duarte Muñoz and Meyer, 2020; Evans et al., 2020; Mohr et al., 2020), we integrate regulatory, economic, social, and technological perspectives to draw a more complex picture. Hence, we pose our research question as follows: How will COVID-19 impact the future of the European football ecosystem in the short, medium and long term? To derive an objective, credible answer to this question, we develop Delphi-based scenarios (Nowack et al., 2011). We use a Delphi survey for data collection because this method allows the collection of both qualitative and quantitative input from a heterogeneous expert panel (Grisham, 2009). The survey itself was organized in a real-time format (Gnatzy et al., 2011; T. Gordon and Pease, 2006). The methodology has proven to enhance the validity, acceptance, plausibility and consistency of future-oriented studies by allowing experts to effectively discuss complex matters in a structured and anonymous group communication process (Belton et al., 2019; Linstone and Turoff, 2011).

2. Background

2.1. Relevance of the European football ecosystem

Sports and sportive competitions have always been part of human society (Coakley and Pike, 2001), and most people regularly engage in sports – either actively as professional or recreational athletes or passively as sports spectators (Leeds et al., 2018). In recent decades, the sports industry has seen exceptional growth, leading to a social-economic impact that also reflects in numbers (Eurostat, 2019; Siegfried and Zimbalist, 2006; Southall et al., 2003). According to the European Parliament Research Service, the sports industry generates almost 3% of the total European Union (EU) gross value added and provides more than seven million sports-related jobs, which is equivalent to 3.5% of total EU employment (Katsarova and Halleux, 2019). Concerning professional sports in Europe, football has the largest economic contribution with a record revenue of €21 billion in 2018 (UEFA, 2020a). In the same year, the International Federation of Association Football (FIFA) likewise reported the highest revenues in history with €4.1 billion (FIFA, 2019). Given the steady performance over the last few decades, by the end of 2019, there were no evident signs of impending revenue shortfalls for the near future (Rohde and Breuer, 2016). However, the outbreak of COVID-19 led to an unexpected lockdown and an almost immediate stop in operations. In this regard, the European football ecosystem is an interesting subject of observation, as the industry as such has been widely spared from crises in the past – at least on an operational level.

2.2. Existing research on the impact of COVID-19 on football

Given the topicality of events related to the COVID-19 outbreak, we currently know little about the potential impact of the disease on the world of football. The scientific work that has already been published mainly focuses on four aspects: (1) When and how to return to elite football operations (e.g., Buldú et al., 2020; Carmody et al., 2020; Corsini et al., 2020; Dores and Cardim, 2020; Mohr et al., 2020; Parnell et al., 2020), (2) the effects of the lockdown on fandom and social life (e.g., Black, 2020; Duarte Muñoz and Meyer, 2020; Waliaula and Okong'o, 2020), (3) observations from the re-start of professional competitions (e.g., Bryson et al., 2020; Reade et al., 2020a, 2020b), and (4) the future impact of COVID-19 on particular areas of the European football ecosystem (e.g., Clarkson et al., 2020; Fühner et al., 2020; Webb, 2020).

Especially regarding the last group of future-oriented research, the body of literature is limited. Clarkson et al., for example, have analyzed women's football in England and reflected "upon some of the immediate threats and uncertainties for the governing body, leagues, and clubs" (2020, p. 8). In light of this angle, the commentary did not build on empirical data but rather highlighted crucial challenges to ensure the future of professional women's football in England. Webb, in turn, has addressed the impact of COVID-19 on referees in world sports, concluding that, despite the challenges posed by the pandemic, "opportunities can be working towards changing attitudes and behavior towards referees" (2020, p.5) if governing bodies take supporting decisions. In addition, in this case, the scope of research was rather narrow, and no primary data were collected to underpin assumptions. Against this backdrop, our study contributes to the literature by providing a holistic perspective on the short-, medium-, and long-term impact of COVID-19 on the European football ecosystem based on primary data.

3. Research methodology

For our study, we used a real-time online Delphi survey to be able to both collect reliable data for scientific analyses (Aengenheyster et al., 2017; Flostrand et al., 2020; Gnatzy et al., 2011) and practically facilitate a valuable expert debate in midst of the COVID-19 crisis (A. V. Gordon et al., 2020; Kavoura and Andersson, 2016). To ensure the quality and validity of our Delphi results, we applied the approach proposed by Roßmann et al. (2018), which is illustrated in Fig. 1. First, we developed a comprehensive set of 15 projections based on expert workshops, interviews, and desk research. Second, we selected a heterogeneous set of subject matter experts to participate in our study. Third, we conducted the Delphi survey and asked participants to assess each of our 15 projections regarding their estimated expected probability (EP) of occurrence, their estimated impact (I) in case of occurrence, and their subjective desirability (D) of occurrence. Moreover, we asked participants to share their level of confidence (C) in responding to the projections. Last, we analyzed the results on qualitative and quantitative levels and additionally examined the impact of surface- and deep-level diversity criteria on valuation behavior before closing with a scenario analysis and discussion. The study was conducted over a period of seven weeks in April and May 2020 (i.e., during a peak period of the outbreak in Europe). While this was a highly interesting period of examination, we explicitly want to acknowledge the fact that the experts' assessments depended on a temporary impression of the potential impact of COVID-19 on the European ecosystem, as they had no detailed information about subsequent developments with regards to vaccines or treatments of the disease.

3.1. Development of Delphi projections

To study the impact of COVID-19 on the European football ecosystem, we aimed to create a holistic picture of potential effects caused by the lockdown. Hence, we conducted an initial conceptualization workshop to define a comprehensive structure for a multifaceted
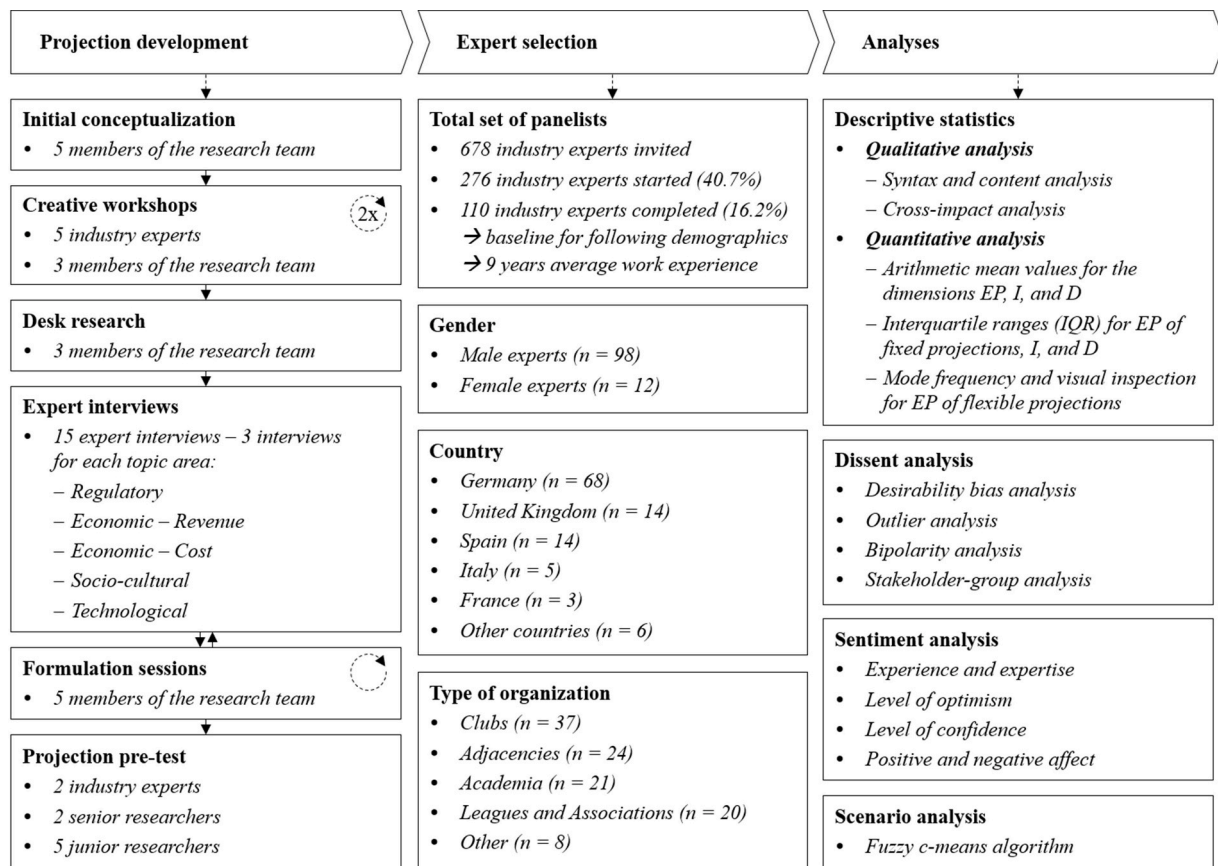
Fig. 1. Projection development, expert selection, and analyses (based on Roßmann et al., 2018).

set of future projections. We therefore adopted the classical PEST (political, economic, social, technological) analysis framework, which has frequently been used in foresight studies (Jiang et al., 2017; Merkel et al., 2016). Given the context of football, we interpreted the political dimension with a strong focus on regulations, since governing bodies such as leagues and associations determine the regulatory framework for sportive competitions. Based on this structure (regulatory, economic, social, technological), we held two creative workshops with industry experts to create a long-list of potential developments related to COVID-19. In these sessions, we generated 78 ideas, which were then grouped and allocated according to the four dimensions. The discussions also revealed that economic consequences were the most urgent issue for the industry, and they could be considered from both revenue and cost perspectives. This is why we later split this dimension into revenue-related projections (economic – revenue) and cost-related projections (economic – cost). Within the research team, we then conducted desk research to scrutinize the initial set of ideas and to add another source of input to the projection development process (Nowack et al., 2011). Given the topicality of the subject, we took into account previous research but also tried to reflect the current public debate to refine the thought trajectories.

Next, we organized 15 expert interviews to gather feedback on the refined long-list of projections from professionals with acknowledged expertise in their topic areas. To avoid biased perspectives (Bonaccorsi et al., 2020), we invited representatives from different stakeholder groups, such as clubs, leagues, associations, media companies, consultancies, and academia, as well as from different countries. Parallel to the interviews, we conducted formulation sessions to include additional suggestions and to eliminate or condense certain projections. This iterative approach allowed us to speed up the process without jeopardizing the methodological rigor that is crucial for the success of a Delphi study (Landeta, 2006; Salancik et al., 1971). As a result, we derived a final set

of 15 projections, with three projections for each of our five dimensions. In the last step, two senior researchers once again checked these 15 projections for all relevant quality criteria, and two previously not involved industry experts and five junior researchers checked comprehensibility and clarity (Hasson and Keeney, 2011; Markmann et al., 2020).

In the process of expert discussions, we also evaluated suitable timeframes to best understand the potential impact of COVID-19 on the European football ecosystem. While Delphi surveys often forecast developments in the far future (i.e., time horizons of more than 10 years), we also wanted to gain insights into the short-term and medium-term consequences of the crisis because these would also deliver a helpful practical contribution. To create such a perspective, we used two types of projections, which we called fixed (end-state) and flexible (interval) projections. For fixed projections, we set the review date to the end of 2022 and asked participants to assess the expected probability of the occurrence of those projections in 10% intervals. For flexible projections, we asked experts to indicate the most probable date of occurrence. In this case, participants could choose a response in quarterly intervals from the survey date on (i.e., Q2/2020) until the end of 2024, or, alternatively, indicate that the projection would either become reality "later than 2024″ or would "never" occur at all (Schweizer et al., 2020). Based on the characteristics of our topics, we decided to either formulate them as fixed or flexible projections. For example, our first projection (*"Clubs are required by regulation to guarantee administrative operations in case of unforeseen disasters."*) was formulated in the flexible format because we were interested in whether policymakers and regulators would act soon or at a later date in response to the pandemic. The second projection (*"In 2022, the number of fixed games/dates in the international match calendar has been reduced."*) was formulated in the fixed style because we were interested in the probability that officials would react quickly – in this particular case, up until the World Cup in Winter

2022. The final set of projections and their format is explained and presented in the following section.

3.1.1. Regulatory projections

In terms of the regulatory consequences of COVID-19, we built on the creative workshops with industry experts. One central motive that emerged from the discussions was the financial instability of clubs shortly after the lockdown. The majority of football-related organizations, in this case the clubs, still maximized for sportive success; this goal partly incentivizes limited cash reserves. The same holds true for leagues and associations, which by nature mostly operate as non-profit organizations. Therefore, many voices publicly demanded new regulations within the European football ecosystem, which also reinvigorated the debate around a possible salary cap for players (Kesenne, 2000). The lockdown also showed that there was very limited room for maneuvering for clubs, leagues and associations given the multitude of games to be played. Hence, experts expressed the need to thin out the international match calendar in order to gain more freedom for leagues and associations to react. Overall, we derived the three regulation-related projections below:

> **Projection 1 (flexible).** Clubs are required by regulation to guarantee administrative operations in case of unforeseen disasters *(short: disaster regulations)*.
> **Projection 2 (fixed).** In 2022, the number of fixed games/dates in the international match calendar has been reduced *(short: match calendar)*.
> **Projection 3 (flexible).** A salary cap for professional football players has been introduced *(short: salary cap)*.

3.1.2. Economic projections with revenue focus

With respect to revenues, we aimed to focus on the most significant levers for football-related organizations in Europe. First, we identified (strategic) investments as a pivotal financial resource for various clubs and anticipated that the increased financial pressure due to the lockdown could lead to an increased willingness or compulsion for clubs to offer shares (Andreff, 2007; Rohde and Breuer, 2017). Moreover, an analysis of clubs' financial statements revealed that the two major revenue streams beyond potential investments are broadcasting and sponsoring (UEFA, 2020a). Hence, we wanted to understand if these two sources of income were at risk and whether media companies and sponsors would alter their sports engagement in response to the COVID-19 lockdown (Henderson, 2010; Naidenova et al., 2016). After the process of iteration with experts and the research team, we came to the following three economic projections with a revenue focus:

> **Projection 4 (fixed).** In 2022, (strategic) investors got more shares in European football clubs due to COVID-19 *(short: investors' shares)*.
> **Projection 5 (flexible).** Clubs' broadcasting revenues have started to decrease
>   *(short: broadcasting revenues)*.
> **Projection 6 (flexible).** Clubs' sponsorship revenues have reached pre-COVID-19 level *(short: sponsorship revenues)*.

3.1.3. Economic projections with cost focus

Similar to the revenue perspective, we aimed to cover essential cost factors for football clubs in our set of projections. First, player salaries represent the largest cost item for clubs. While potential salary caps have been included in the regulatory dimension, our creative workshops revealed that clubs could include more performance-based elements in player contracts, thus reducing the risk in case of a loss of income. While this model is common in other industries, it is still underrepresented in European football, particularly when salary incentives are not linked to a player's performance on the pitch, but rather to the overall financial performance of the club, for instance (Selviaridis and Wynstra, 2015). Another major cost is related to transfers, which typically constitute the

second-highest cost item for clubs. A potential shock to transfer fees could therefore have a severe impact on the entire ecosystem (M. Ahmed, 2020; Matesanz et al., 2018). Last, the non-player employee payroll also weighs heavily on the cost side. Many organizations announced short-term work at the beginning of the lockdown, and headcount reductions seemed to be within the realms of possibility. Therefore, we formulated the following three economic projections with a cost focus:

> **Projection 7 (flexible).** Player contracts have changed towards a more performance-based model *(short: player contracts)*.
> **Projection 8 (flexible).** Total transfer fees have reached pre-COVID-19 level
>   *(short: transfer fees)*.
> **Projection 9 (fixed).** In 2022, professional football clubs have reduced their number of employees compared to pre-COVID-19 *(short: number of employees)*.

3.1.4. Socio-cultural projections

On a socio-cultural level, we included a set of topics that went beyond the regulatory and economic effects of the lockdown. First, we focused on the actual scene of action – the stadium. Shortly after the outbreak of COVID-19, it became evident that matches behind closed doors would be inevitable for the near future (Q. A. Ahmed and Memish, 2020; Parnell et al., 2020). Still, it remained unclear to what extent the lockdown would impact stadium attendance in the medium to longer term. Especially for lower-league clubs, matchday income is often essential. Therefore, many smaller clubs would face existential risks if local sponsors lessened their financial support because of COVID-19. This particularly holds true in areas with lower purchasing power and less financial stability (Martin et al., 2020). Potential bankruptcies of lower-league clubs would then also affect the local community, taking into account that football is a central component of leisure activities for many children and adults (Müller et al., 2008). A hope that was often expressed in public was an increased sense of social responsibility by clubs and their players, which could protect the ecosystem against larger (reputational) damages. To gain insights into the persistence of possible effects of the lockdown, we confronted the Delphi panel with the following socio-cultural projections:

> **Projection 10 (fixed).** In 2022, live attendance at stadiums has decreased compared to pre-COVID-19 *(short: stadium attendance)*.
> **Projection 11 (fixed).** In 2022, at least one out of ten lower-league clubs has gone bankrupt due to the effects of COVID-19 *(short: clubs' bankruptcy)*.
> **Projection 12 (fixed).** In 2022, clubs (and their players) have a much higher awareness of their social responsibility compared to pre-COVID-19 *(short: social responsibility)*.

3.1.5. Technological projections

As a last dimension, we focused on the technological consequences of COVID-19. Obviously, technological innovation must always involve a monetary advantage or efficiency gains in order to be implemented (Beiderbeck et al., 2020). Therefore, we included the topic of eSports in our set of projections. as competitive gaming was one of the few sports that could still be played and broadcasted, which motivated many clubs to increase their eSports activities during the lockdown (Nicola et al., 2020; Schmidt and Holzmayer, 2019). Further, clubs quickly adopted individual remote training for their players in order to prepare for the potential re-start of competitions (Eirale et al., 2020). However, it was questionable how well these technologies, which were necessarily tested during the lockdown, would transform and potentially disrupt training procedures in the medium term (Frevel et al., 2020). A last topic that emerged from the creative workshop related to advertising activities. Given that many leagues stopped their operations and then re-started with games behind closed doors, there was increased attention to the

monetization of spectators in front of the TV screen or mobile device (De Keyzer et al., 2015). Taking these different technological angles into account, we derived the three following technology-related projections:

Projection 13 (flexible). eSports activities have become a relevant source of revenue (at least 5%) for most football clubs *(short: eSports activities)*.

Projection 14 (fixed). In 2022, football has widely adopted technology to allow for individual remote training of players *(short: remote-training)*.

Projection 15 (flexible). (Fully) personalized advertising has been widely established *(short: personalized advertising)*.

3.2. Expert selection

Proper selection of participants is key for the validity of Delphi research (Hasson et al., 2000). Scholars have shown that the expertise and multi-level diversity of the expert panel have a positive impact on the reliability of results, while at the same time lowering the susceptibility to cognitive biases (Ecken et al., 2011; Spickermann et al., 2014; Winkler and Moser, 2016). Therefore, we aimed to recruit a heterogeneous set of experts, including participants from different countries, diverse stakeholder groups, and age cohorts (Mauksch et al., 2020). In total, we invited 678 representatives of the European football ecosystem to participate in our survey, using offline and online networking approaches (Jiang et al., 2017). To maintain methodological rigor, we contacted all experts individually and specifically asked them not to share the survey link without permission from the research team. Upon invitation, 276 experts opened the survey and 110 actually participated; the overall response rate was thus 16.2% (see Fig. 1). In terms of nationalities, we invited experts from the five largest European football leagues (Wilkesmann, 2011), with a majority of final participants (62%) originating from Germany. Regarding stakeholder groups, we aimed to cover diverse perspectives, and our final set of participants was from several football-related organizations, which we clustered into clubs (33%); leagues and associations (18%); academia, including healthcare specialists (18%); football-related adjacencies (22%, including consulting firms, sales agencies, broadcasters, and media companies); and other organizations (7%). On average, participants were 37 years old and had nine years of experience in the European football ecosystem; the gender split was 89% male and 11% female participants, which roughly represents the sports industry average (Burton, 2015).

3.3. Delphi survey conduction

The real-time format of our study allowed experts to start, pause, and continue the questionnaire at any time. Moreover, it enabled participants to see other experts' assessments immediately after completing the survey, thus encouraging the review process, in which participants could re-access and adjust their own estimations. From a technical perspective, we used *Surveylet* as a professional software tool for Delphi research (Aengenheyster et al., 2017).

To ensure a clear understanding of the procedure, we provided a thorough introduction to all participants, including written and audiovisua information about the Delphi technique. Further, we aimed to mitigate the risk of potential cognitive biases by addressing and explaining them explicitly at the beginning of the survey (Bonaccorsi et al., 2020). Following the introduction, experts were asked to assess all 15 projections quantitatively and qualitatively. The quantitative evaluation included the following four dimensions: probability of occurrence (with the above-mentioned variations for fixed and flexible projections), impact in case of occurrence (five-point Likert scale), desirability of occurrence (five-point Likert scale), and confidence in answering the question (five-point Likert scale). Additionally, participants had the opportunity to provide written statements for each projection, including text boxes for both pro and contra arguments for the

probability dimensions as well as an input field for comments regarding the impact of the projections. These separate feedback requests were designed to encourage participants to actively think of different viewpoints and counter-arguments, thus mitigating belief-perseverance and enhancing judgmental accuracy (Winkler and Moser, 2016). Moreover, we randomized the order of display for all projections in order to avoid disbalanced attention (e.g., more cognitive attention towards projections that were presented at the beginning). In order to be counted as a participant, experts had to revisit the Delphi survey at least once.

3.4. Descriptive statistics – qualitative and quantitative

For the analysis of qualitative inputs, we followed the approach presented by Roßmann et al. (2018) and used two coders to separately break down and label all written arguments. For each projection, the two coders examined three different inputs (pro arguments for expected probability, contra arguments for expected probability, and arguments for impact) with individual coding processes. In accordance with Weber (1990), we defined consistent classification criteria for both our syntax analysis and content analysis; these were also inspired by Roßmann et al. (2018). To assure concordance and interrater reliability, we compared labeling outcomes and calculated the percentage of agreement (Lombard et al., 2002). With an agreement rate of 83.2%, the two coders reached an acceptable level of reliability. The results from this analysis were used to evaluate the quality of the online discourse and provided a foundation for the final discussion.

Qualitative expert opinions were also used to evaluate potential relations between projections and to enrich the discussion of results. To understand more about these interdependencies, we conducted a cross-impact analysis (Bañuls and Turoff, 2011; Serdar Asan and Asan, 2007). The use of cross-impact analyses in Delphi and forecasting research has a long tradition; the technique was first introduced in a seminal paper by Gordon and Hayward (1968). Since then, numerous scholars have elaborated on methodological and contextual research questions associated with cross-impact analyses (Bañuls et al., 2013; Kendall, 1977; Weimer-Jehle, 2006). For this study, we followed a more recent procedure introduced by Lechler et al. (2019) and identified four interaction categories (active, reactive, buffering, and critical). Active projections are those that theoretically have an overall reinforcing impact on the occurrence of other subjects, whereas reactive projections are those that are primarily influenced by the development in other fields (Kosow and Gaßner, 2008). Buffering projections typically have limited interaction effects, while critical projections have both an active and reactive impact on the ecosystem (Lechler et al., 2019).

In terms of quantitative information, we asked for four data points per projection and expert. Accounting for 336 missing values (a missing value rate of 5.1%), we effectively generated 6,264 projection-related numeric assessments. In line with prior Delphi research, we first analyzed the evaluations for the dimensions EP, I, and D to show descriptive statistics and assess panel consensus. For the dimension EP, we applied different approaches to analyze the degree of consensus of flexible and fixed projections. For flexible projections, we used established measures such as mode frequency or visual inspections (Belton et al., 2019; Schweizer et al., 2020). For fixed projections, we relied on the interquartile range (IQR) as a classical indicator for consensus in Delphi research (von der Gracht, 2012). The IQR was also applied to the dimensions I and D to determine the level of agreement among experts. In order to gain insights into potential reasons for diverging expert opinions, we conducted a dissent analysis following our descriptive statistics (Warth et al., 2013).

3.5. Sentiment analysis

Inspired by (Loye 1980) and (Spickermann et al. 2014), we also collected participants' deep-level information to better understand the impact of knowledge, skills, and attitudes on the valuation behavior. To

gain insights into knowledge and skills, we captured the years of experience within the football industry. Additionally, experts could indicate their familiarity with specific topic areas such as strategy, marketing, sales, and digital. In terms of attitudes, we included two dedicated questions to approximate experts' level of optimism. First, we asked participants whether, "in the long run, the consequences of COVID-19 will change the European football ecosystem…": (1) "… to the worse", (2) "… slightly to the worse", (3) "… not at all", (4) "… slightly to the better", or (5) "… to the better". Second, we asked whether "the consequences of COVID-19 will accelerate the technological innovation within the European football ecosystem" and allowed participants to answer on a five-point Likert scale ranging from (1) "strongly disagree" to (5) "strongly agree." Last, given the special circumstances under which this survey was taken (i.e., in the midst of the COVID-19 crisis) and because of possible individual concerns, we also wanted to understand the potential impact of mood on the valuation behavior. For this purpose, we applied a four-item version of the positive and negative affect schedule (PANAS) to capture participants' affective wellbeing (Schimmack, 2008). To derive affect balance (AB) scores prior to the lockdown (AB_{t1}) and during the lockdown (AB_{t2}), we asked participants to indicate how often they had positive experiences (happy) and negative experiences (angry, afraid, sad) in each period (Schimmack et al., 2008). The response options we offered were on a five-point Likert scale ranging from (1) "very rarely" to (5) "very often," and we calculated the affect balance score by subtracting the average scores of the three negative items from the positive item (Schimmack, 2008).

3.6. Fuzzy clustering

To facilitate the evaluation of qualitative comments and structure the discussion of results, Tapio et al. (2011) have suggested grouping the projections based on their quantitative assessments. In this context, Roßmann et al. (2018) have noted the benefits of the non-hierarchical fuzzy c-means algorithm (FCM) to create clusters of Delphi projections. Hence, we followed this approach and applied the FCM using the three quantitative dimensions EP, I, and D. Given that we collected EP in two different ways, i.e., for flexible and fixed projections, we transformed the assessments of this dimension in order to make both types of projections comparable. Therefore, we introduced three new response categories for EP: short-term occurrence, mid- to long-term occurrence, and no occurrence. For flexible projections, we assigned every expert who indicated that a date of occurrence by the end of 2022 was the most likely to the first group (short-term occurrence). All participants who indicated that a projection would never occur were assigned to the last group (no occurrence), and the rest were assigned to the second group (mid- to long-term occurrence). For fixed projections, we assigned participants who expected a projection to occur by the end of 2022 with a probability of more than 50% to the first group (short-term occurrence) and those who indicated a probability equal to or lower than 10% to the last group (no occurrence). We included the 10% assessments to account for the fact that participants tend to avoid

extreme ends of the scale (de Jong et al., 2008). Again, the remaining experts were assigned to the second group, who expected a mid- to long-term occurrence. According to this logic, we generated new EP values per participant and projection, following the coding scheme presented in Fig. 2. Based on this data, we calculated the mean EP for each projection, which was then used for the FCM to derive meaningful clusters, including both flexible and fixed projections.

4. Results

4.1. Descriptive statistics

To ensure a reliable data quality for further processing, all expert inputs were checked for errors before analysis (Häder, 2002). In addition, we tested for the existence of a potential non-response bias by splitting participants into two groups (the first 20 respondents and the last 20 respondents). Given the not normally distributed data, we then conducted post-hoc Mann-Whitney *U* tests for all relevant dimensions of our survey (Belton et al., 2019). Since the results did not show significant differences between these groups, we conclude that no extensive non-response bias is present.

On a qualitative level, the experts shared 3414 written statements in total. An average of 31 comments per participant indicates a thorough and profound examination of the projections that were provided. To analyze the formal quality of inputs, we adapted the assessment scheme presented by Foerster and von der Gracht (Förster and von der Gracht, 2014) and illustrated the results in Table 1. Regarding syntax, the vast majority of comments (87.4%) were shared as whole sentences, which supports the statement that participants were highly engaged in the Delphi discussion process. In terms of content, half of the written statements contained beliefs (50.1%), followed by differentiations

Table 1
Syntax and content analysis of written statements.

Statement type	Total amount	Percentage share
Syntax analysis		
Whole sentences	2984	87.4%
Phrases	355	10.4%
Catchwords	75	2.2%
Content analysis		
Beliefs	1710	50.1%
Differentiation	658	19.3%
Cause-effect relationship	554	16.2%
Example	249	7.3%
Historical analogy	73	2.1%
Experience	67	2.0%
Trend	47	1.4%
No information	36	1.1%
Figures	10	0.3%
Misunderstanding	10	0.3%

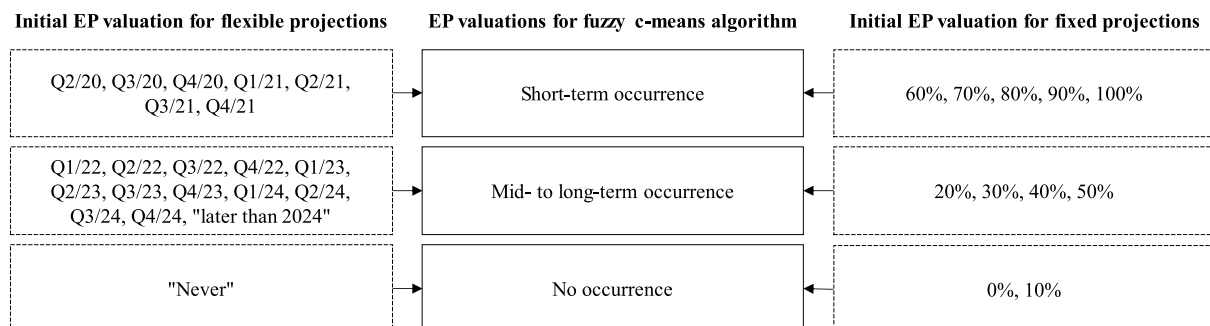| Initial EP valuation for flexible projections	EP valuations for fuzzy c-means algorithm	Initial EP valuation for fixed projections
Q2/20, Q3/20, Q4/20, Q1/21, Q2/21, Q3/21, Q4/21	Short-term occurrence	60%, 70%, 80%, 90%, 100%
Q1/22, Q2/22, Q3/22, Q4/22, Q1/23, Q2/23, Q3/23, Q4/23, Q1/24, Q2/24, Q3/24, Q4/24, "later than 2024"	Mid- to long-term occurrence	20%, 30%, 40%, 50%
"Never"	No occurrence	0%, 10%

Fig. 2. EP valuations for fuzzy c-means algorithm.

(19.3%) and cause and effect relationships (16.2%). The evaluation of comments in the cross-impact analysis shed light on the interaction effects between projections. In this regard, Fig. 3 shows the categorization of projections where only projections 1 (disaster regulations) and 7 (player contracts) ranged outside the buffering category. This insight is relevant for the discussion of the results, as it allows the projections to be treated generally as independent of each other, except for the two projections mentioned above, which are explicitly discussed in the scenario analysis.

The quantitative results of the Delphi survey are displayed in Table 2. Experts rated 11 out of 15 projections with a mean impact greater than 3.0, thus indicating a substantial effect on the European football ecosystem in the case of occurrence (Roßmann et al., 2018). In this context, projection 3 (salary cap) is expected to have the highest impact with an average I of 4.2, followed by projection 5 (broadcasting revenues) with an average I of 4.0. Among the four projections that were rated with a mean impact below 3.0, projection 14 (remote training) is expected to have the least influential effect. However, with an average I of 2.5, it still has a non-negligible impact on the European football ecosystem (if it occurs), which is why all 15 projections were included in subsequent analyses.

Regarding the desirability of occurrence, the results show a wide spread, which indicates that the projections covered a spectrum of potentially pleasant and unpleasant developments caused by COVID-19. With an average D of 4.19, projection 12 (social responsibility) had the highest desirability score among the experts. The two least desirable projections were projection 11 (clubs' bankruptcy) with an average D of 1.44 and projection 10 (stadium attendance) with an average D of 1.61. All three of these projections with a strongly pronounced opinion towards desirability reached agreement among participants if we set a threshold of 1.25 (25% of the five-point Likert scale) as the maximum value to indicate consensus (Warth et al., 2013). Remarkably, all three projections stem from the subset of socio-cultural projections.

As indicated in the methodology section, the expected probability of occurrence of flexible and fixed projections was analyzed separately. Starting with flexible projections, the results show a mode frequency above 50% for projection 3 (salary cap), thus indicating a consensus among experts that a salary cap will never be implemented within the European football ecosystem (Chakravarti et al., 1998; Schweizer et al., 2020). While no other flexible projection meets the consensus criterion

of a mode frequency above 50%, a visual inspection of the results gives further insights into the experts' judgement on these potential developments (see Fig. 4). For projection 5 (broadcasting revenues), more than 45% of the participants expected no short-term decrease in broadcasting revenues. In fact, 30.1% assumed they will never decline. Additionally, with respect to the revenue impact of eSports activities, participants' responses indicate a rather clear opinion. Almost all experts anticipated that eSports revenues would become a relevant source of revenue at some point; however, the largest share of participants (37.5%) expected this to occur later than 2024. Similarly, experts judged that projections 8 (transfer fees) and 15 (personalized advertising) would become reality, but the visual inspection does not indicate a clear conclusion as to when this will be the case. A somewhat clearer picture emerges for projection 6 (sponsorship revenues). The results show a bell-shaped distribution and indicate that one third (33.7%) of the experts expected sponsorship revenues to reach their pre-COVID-19 level by Q3/2022. Finally, projections 1 (disaster regulations) and 7 (player contracts) suggest a rather bipolar picture, with one group of experts arguing that these projections will occur in the rather short term, by end of 2021, while another group of experts expressed that these projections will never become reality.

Among the fixed projections that were tested for an expected probability to occur by end of 2022, only projection 2 (match calendar) reached consensus with an EP of 23.9% and an interquartile range of 20. This is in line with previous research stating that projections with a strong trend to one of the two ends are more likely to reach consensus (Ogden et al., 2005). Except for projection 11 (clubs' bankruptcy), which had an average EP of 66.3%, all other projections showed a mean EP in the range of 40–60%, indicating that the impact of COVID-19 in these dimension is still difficult to assess (von der Gracht and Darkow, 2010). Therefore, the subsequent dissent and sentiment analyses are also expected to generate more insights into these domains.

4.2. Dissent analysis

4.2.1. Desirability bias analysis

Previous research has shown that the desirability of a certain event can have a positive influence on an individual's likelihood judgement (Ecken et al., 2011; Krizan and Windschitl, 2007). Therefore, we calculated Pearson's product-moment correlation coefficients between
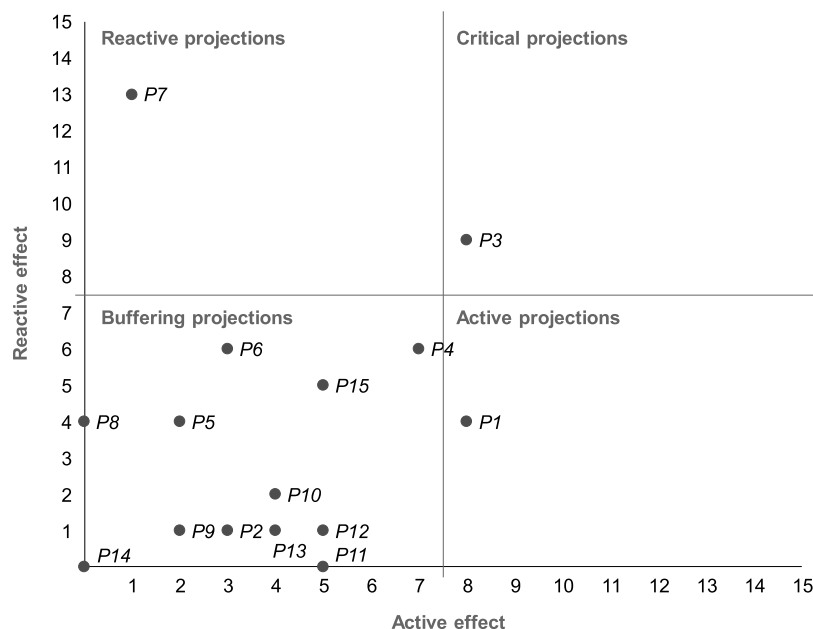

Fig. 3. Results of cross-impact analysis.

Table 2

Quantitative Delphi results.

Projection	EP (mean)	IQR	EP (mode)	Mode frequency	I (mean)	IQR	D (mean)	IQR
Regulatory								
1: Disaster regulations	–	–	Q3/21	30%	3.1	2	2.4	1.75
2: Match calendar	**24%**	**20**	–	–	**3.4**	**1**	3.0	2
3: Salary cap	–	–	**Never**	**52%**	**4.2**	**1**	3.2	2
Economic – revenue								
4: Investors' shares	54%	40	–	–	**3.6**	**1**	2.4	1
5: Broadcasting revenues	–	–	Never	30%	**4.0**	**1**	1.8	1
6: Sponsorship revenues	–	–	Q3/22	32%	**3.6**	**1**	3.5	1
Economic – cost								
7: Player contracts	–	–	Never	24%	**3.3**	**1**	3.5	1
8: Transfer fees	–	–	Q3/21	19%	**3.5**	**1**	2.8	2
9: Number of employees	41%	30	–	–	**2.9**	**1.25**	1.7	1
Social								
10: Stadium attendance	41%	60	–	–	**3.6**	**1**	1.6	1
11: Clubs' bankruptcy	66%	30	–	–	**3.5**	**1**	1.4	1
12: Social responsibility	59%	40	–	–	2.9	2	4.2	1
Technological								
13: eSports activities	–	–	>2024	38%	**2.6**	**1**	2.9	2
14: Remote training	43%	50	–	–	**2.5**	**1**	2.6	1
15: Personalized advert.	–	–	>2024	22%	3.0	2	3.4	1

Note. EP = expected probability of occurrence (0–100%); IQR = interquartile range; I = impact in case of occurrence; D = desirability of occurrence; Consensus (IQR for EP(mean) $\leq$ 25, mode frequency for EP(mode) $\geq$ 50%, IQR for I and $D \leq 1.25$) is marked in bold.

all fixed projections and the respective desirability assessments. The results showed statistically significant correlations for four out of the seven fixed projections. Hence, we applied a post-hoc procedure introduced by Ecken et al. (2011) to derive adjusted EP values for all fixed projections by considering the correlation between the participants' desirability and probability assessments. While we found some differences with respect to average expected probabilities, the adjustments did not lead to consensus for additional projections (see Table 3). Since the time horizon of the projections at hand is rather short (i.e., the end of 2022), this result is in line with prior work noting that the desirability bias in Delphi studies is generally higher "in case of long prospect horizons" (Winkler and Moser, 2016, p. 68).

For the flexible projections, standard correlation tests were not applicable, since the answer options were non-metric, including the two text options "later than 2024″ and "never" (Schweizer et al., 2020). Instead, we took a two-step approach to analyze potential desirability biases for these projections. In the first step, we created a dichotomous variable to indicate whether experts assessed if a projection would occur at all or not (i.e., if they indicated "never"). Given that variables were not normally distributed, we then applied the Mann-Whitney U test to analyze variations with respect to desirability between these two groups. The results show significant differences for four of the eight flexible projections, which indicates that the average desirability was higher for the subgroup of experts that assumed those projections would become reality (see Table 3). In the second step, we explicitly analyzed the subgroup of experts that indicated the projections would occur in the short to medium term (i.e., by the end of 2024). In this case, the response options were metric, which is why we applied standard correlation tests to identify the relationship between probability and desirability assessments. We found significant correlations for four out of eight flexible projections. However, one half indicated a positive correlation, while the other half indicated a negative correlation (see Table 3), thus not indicating a consistent desirability bias effect.

4.2.2. Outlier analysis

The goal of an additional outlier analysis is to identify EP scores that differ significantly from the remaining data, thus leading to a potential distortion of mean values (Aggarwal, 2015). To eliminate this eventuality, we identified all standardized EP values exceeding the 99% confidence level (i.e., with a z-score above or below 2.58). Based on this criterion, only projection 2 *(match calendar)* was revealed to have outliers. With three outliers in total, the amount of datapoints exceeded a

commonly accepted limit of 1%, above which it is assumed that outliers can affect average scores (Field et al., 2012). To account for this potential effect, we excluded the three identified outliers only for this particular analysis and re-calculated the EP score and IQR value (Warth et al., 2013). While the IQR remained constant (20), the expected probability dropped by 1.4 percentage points to 22.5%, indicating that the experts rated the potential reduction of the match calendar (projection 2) even more unlikely after the outlier adjustment. Despite this small correction, it can be concluded that there is no significant impact of outliers on the Delphi results at hand, which is underpinned by the fact that the three outliers also did not contribute qualitative comments that diverged significantly from the rest of the experts' opinions.

4.2.3. Bipolarity analysis

In the absence of a consensus on mean EP scores, Dajani et al. (1979) have identified bipolarity as a potential explanation for dissent and thus a valid outcome of a Delphi study. Therefore, we tested all projections for potential opposing poles, that is, two separate groups of experts estimating EP, one with a high score and one with a low score (Warth et al., 2013). First, we checked for potential bimodal distributions in EP assessments and found no case in which two or more answer options had the same mode frequency (Scheibe et al., 1975). As an alternative approach, we conducted a visual inspection of histograms for all projections (Warth et al., 2013). As mentioned earlier, the two flexible projections, 1 *(disaster regulations)* and 7 *(player contracts)*, indicated a tendency towards bipolarity. Notably, these two projections were the only ones that were not classified as buffering projections in the cross-impact analysis. Hence, one reason for bipolarity regarding these topics might be a different view of two opposing cohorts of experts on the interaction effects of these projections. Another reason might be related to the experts' background, which is the subject of analysis in the following subchapter.

For the fixed projection, no bipolarity could be observed. The same holds true for the impact and desirability assessments of all projections, and we thus conclude that bipolarity does not significantly drive dissent in our Delphi results.

4.2.4. Stakeholder group analysis

In their work on a dissent-based approach for multi-stakeholder scenario development, Warth et al. have noted that "diverging interests of the panelists may cause dissent" (2013, p. 573). This assumption could also be valid in the context of our Delphi study.
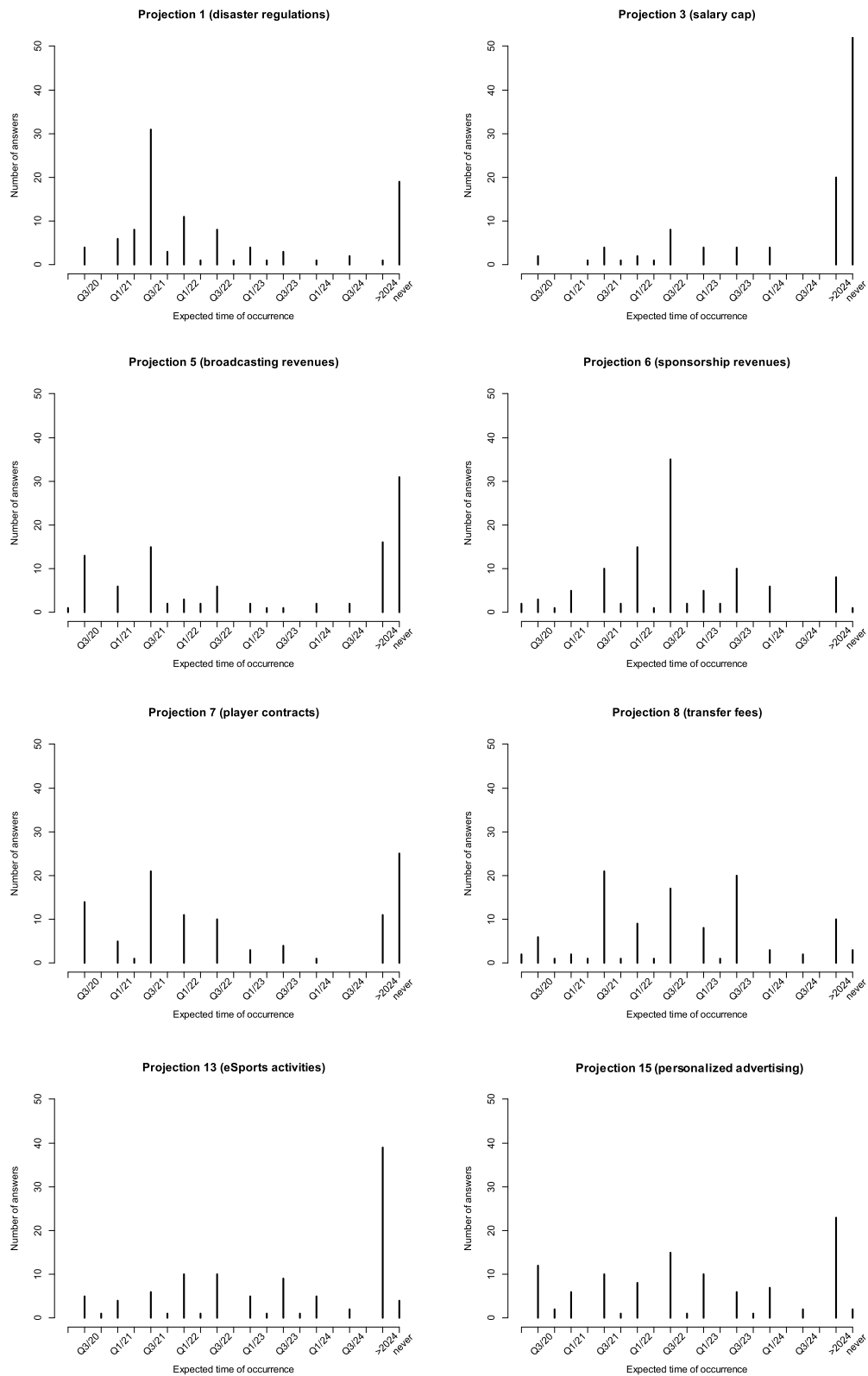
Fig. 4. Histograms of flexible projections.

Therefore, we analyzed the four different stakeholder groups: clubs, leagues and associations, academia, and football-related adjacencies. The results of this analysis are presented in Table 4.

With regard to the expected probabilities of fixed projections, the results did not reveal statistically significant differences ($p < .05$); however, at a 10% significance level, marginally significant differences between groups become apparent (see Table 5). For projection 2 *(match calendar)*, the Mann-Whitney *U* test indicated a marginally significant

Table 3
Dissent analysis – desirability bias.

Projection	r	df	t	p
Regulatory				
1: Disaster regulations	**−0.24**	**82**	**−2.20**	**.031**
2: Match calendar	.18	105	1.87	.065
3: Salary cap	**.39**	**29**	**2.26**	**.032**
Economic – revenue				
4: Investors' shares	**.27**	**101**	**2.80**	**.006**
5: Broadcasting revenues	.26	54	1.97	.054
6: Sponsorship revenues	**−0.32**	**87**	**−3.18**	**.002**
Economic – cost				
7: Player contracts	.11	67	0.92	.359
8: Transfer fees	.06	93	0.56	.580
9: Number of employees	.16	103	1.68	.097
Social				
10: Stadium attendance	**.23**	**100**	**2.42**	**.017**
11: Clubs' bankruptcy	.05	102	0.48	.632
12: Social responsibility	**.29**	**106**	**3.18**	**.002**
Technological				
13: eSports activities	−0.21	58	−1.66	.103
14: Remote training	**.60**	**105**	**7.74**	**<0.001**
15: Personalized advert.	**.22**	**78**	**1.99**	**.049**

Note. Statistics describe correlation between expected probability and desirability of each respective projection. Projections with statistically significant correlations ($p < .05$) are marked in bold.

difference between participants from adjacencies and academia. In particular, academics consensually (IQR of 20) expected the match calendar not to be reduced (the average EP was 18.6%). Adjacency representatives, in turn, rated the projection with the highest average EP (29.1%) of all stakeholder groups but did not reach intra-group consensus (IQR of 30). Another marginally significant difference was found with respect to projection 11 *(clubs' bankruptcy)*. Participants from leagues and associations reached intra-group consensus (IQR of 20), assuming that it is rather likely (average EP of 76.5%) that at least one of 10 lower-league clubs will go bankrupt due to the effects of COVID-19. All other subgroups failed to reach consensus but were less pessimistic in terms of clubs' bankruptcies. Projection 14 *(remote training)* was the last projection to show marginally significant differences, in this case, between academics and club representatives. None of the subgroups reached intra-group consensus for this projection, but it could be observed that academics had the highest average EP value (55.2%), while experts working for football clubs were rather skeptical

(average EP of 38.7%) that individual remote training for players will be established. Although the results of the Mann-Whitney *U* test did not show significant differences for projection 9 *(number of employees)*, it is noteworthy that experts from clubs were the only stakeholder group to reach consensus (IQR of 20) on this topic. With an average EP of 40%, this subgroup was close to the overall assessment of all participants (average EP of 40.8%); only academics were on average more optimistic that the number of clubs' employees will not decrease by the end of 2022 (average EP of 34.8% and IQR of 45).

For all flexible projections, we first tested if stakeholder groups differed in their binary assessment of whether projections would become true (i.e., any valuation except for "never") or not. In this case, we found no significant differences among all four groups. We next analyzed all participants who rated that a projection would occur in the short to medium term (i.e., any value except for "later than 2024″ or "never") in order to compare assessments on a metric scale. In this case, we found statistically significant differences for projections 7 *(Player contracts)* and 13 *(eSports activities)*. In both cases, representatives from clubs and academia had significantly different views. For player contracts, experts from clubs indicated that adjustments could be made sooner. In terms of eSports, however, clubs did not see a high chance that competitive gaming could contribute a significant share to their revenues, while half of the academics were certain that this could happen by mid-2023.

For the impact and desirability dimensions of our projections, the mean difference tests indicated significant deviations between groups, as depicted in Table 4. Especially for projection 9 *(number of employees)*, the experts from leagues and associations assumed a significantly higher impact compared to all other groups. In terms of desirability, projection 3 *(salary cap)*, projection 13 *(eSports activities)*, and projection 14 *(remote training)* are to be highlighted, as in these cases, the judgement of one group was different from two other groups. Adjacency representatives showed a significantly higher average desirability (D of 3.8) for a salary cap than participants from academia, leagues, and associations. For the technological projections 13 *(eSports activities)* and 14 *(remote training)*, academics expressed the highest desirability among all subgroups of experts, while club representatives were most hesitant about the rising importance of eSports, and participants from adjacent organizations were most reserved about individual remote training.

Table 4
Stakeholder group analysis.

Projection	Clubs			Leagues and associations			Academia			Football-related adj.		
	EP	I	D	EP	I	D	EP	I	D	EP	I	D
Regulatory												
1: Disaster regulations	Q3/21[a]	3.0	**3.4**	Q3/21 [a]	**2.8**	**3.7**	Q3/21 [a]	**3.4**	**3.4**	Q3/21 [a]	3.0	3.0
2: Match calendar	24%[b]	**3.3**	2.9	23%[b]	**3.5**	3.1	19%[b]	**3.4**	3.0	21%[b]	3.5	3.1
3: Salary cap	Never [a]	**4.2**	3.3	Never [a]	4.0	3.0	**Never [a]**	4.2	2.7	**Never [b]**	4.2	3.8
Economic – revenue												
4: Investors' shares	52%[b]	**3.6**	2.3	53%[b]	3.6	2.6	54%[b]	**3.8**	2.3	24%[a]	3.6	2.4
5: Broadcasting revenues	Never [a]	3.8	**1.7**	Never [a]	3.9	1.8	Never [a]	4.4	2.1	Never [b]	4.3	1.9
6: Sponsorship revenues	Q3/22 [a]	3.5	**3.8**	Q3/22 [a]	3.5	3.6	Q3/22 [a]	3.7	3.5	Q3/22 [a]	3.6	3.4
Economic – cost												
7: Player contracts	Q3/21 [a]	3.2	**3.4**	Never [a]	3.4	3.7	Q3/22 [a]	3.3	3.6	Never [a]	3.3	**4.7**
8: Transfer fees	Q3/21 [a]	**3.7**	2.8	Q3/21 [a]	3.4	2.6	Q1/22 [a]	3.7	3.1	Q3/23 [b]	**3.2**	2.8
9: Number of employees	**40% [b]**	2.9	1.6	44%[b]	3.4	1.7	35%[b]	3.0	1.6	43%[a]	**2.5**	1.9
Social												
10: Stadium attendance	34%[b]	3.6	**1.4**	49%[b]	3.7	1.8	38%[b]	3.7	1.4	48%[a]	3.5	2.0
11: Clubs' bankruptcy	66%[b]	3.5	**1.3**	**77% [b]**	3.8	1.6	61%[b]	3.6	1.4	63%[a]	3.3	**1.7**
12: Social responsibility	62%[b]	3.2	**4.2**	58%[b]	2.7	4.2	55%[b]	2.9	4.2	56%[a]	2.6	4.0
Technological												
13: eSports activities	>2024 [a]	**2.6**	2.7	>2024 [a]	**2.7**	3.1	>2024 [a]	**2.6**	3.4	>2024 [b]	**2.8**	2.7
14: Remote training	34%[b]	**2.7**	2.3	42%[b]	**2.2**	2.8	55%[b]	**2.7**	3.2	39%[a]	**2.4**	2.2
15: Personalized advert.	>2024 [a]	3.1	**3.3**	>2024 [a]	**2.8**	3.3	>2024 [a]	3.0	**3.6**	Q3/21 [a]	3.0	**3.5**

Note. EP = expected probability of occurrence: [a] EP(mode), [b] EP(mean); I = mean impact in case of occurrence; D = mean desirability of occurrence; Consensus (IQR for EP(mean) $\leq$ 25, mode frequency for EP(mode) $\geq$ 50%, IQR for I and $D \leq$ 1.25) is marked in bold.

Table 5
Stakeholder group analysis – results of the Mann-Whitney U test.

Group comparison	Projection	Dimension	U	p
Clubs / Leagues and associations	9 *(number of employees)*	I	228.5	.045
	11 *(clubs' bankruptcy)*	EP [a]	273	.074
Clubs / Academia	7 *(player contracts)*	EP [b]	114.5	.026
	13 *(eSports activities)*	EP [b]	76	.018
	13 *(eSports activities)*	D	198	.005
	14 *(remote training)*	EP [a]	271	.056
	14 *(remote training)*	D	199.5	.002
Clubs / Football-related adjacencies	8 *(transfer fees)*	I	578.5	.025
	10 *(stadium attendance)*	D	306	.028
	11 *(clubs' bankruptcy)*	D	267	.006
	12 *(social responsibility)*	I	506.5	.026
Leagues and associations / Academia	1 *(disaster regulations)*	I	127.5	.037
	11 *(clubs' bankruptcy)*	EP [a]	273.5	.093
	14 *(remote training)*	I	135	.044
Leagues and associations / Football-related adjacencies	3 *(salary cap)*	D	128	.018
	9 *(number of employees)*	I	309.5	.001
	11 *(clubs' bankruptcy)*	EP [a]	307	.057
Academia / Football-related adjacencies	2 *(match calendar)*	EP [a]	311.5	.092
	3 *(salary cap)*	D	350.5	.008
	13 *(eSports activities)*	D	120	.008
	14 *(remote training)*	D	132	.005

Note. EP [a] = expected probability of occurrence for fixed projections; EP [b] = expected time of occurrence for flexible projections and valuation of short- to medium-term occurrence (i.e., before end of 2024); I = impact in case of occurrence; D = desirability of occurrence.

4.3. Sentiment analysis

4.3.1. Experience and expertise

Experience is often related to years on the job instead of actual expertise. To account for the fact that there is still a scientific debate as to which indicator is more accurate, we tested for both (Burgman et al., 2011). In terms of years on the job, our Delphi panel covers a range from one to 40 years, thus providing a heterogeneous sample that includes both rookie and veteran perspectives (Spickermann et al., 2014). Based on our dataset, statistical tests suggested that there are partially significant relationships between years on the job and projection-related assessments. For all projections and dimensions, we found only two correlations indicating that experienced experts are less concerned with regard to headcount reductions (correlation of D for projection 9 and years of experience: $r = 0.21$, $p = .03$) and assign less impact to potential bankruptcies of lower-league clubs (correlation of I for projection 11 and years of experience: $r = -0.23$, $p = .02$).

To obtain another proxy for experience, we asked participants to assess their expertise in different topic areas. Based on the self-reported skillsets, we conducted non-parametric mean value comparisons to see if expertise in certain areas affected the valuation behavior. Table 6 shows all statistically significant variances in mean values. Experts with expertise in digital, for instance, differed on three dimensions from other participants. First, they saw a slightly lower impact of the potential bankruptcies of lower-league clubs. Second, they expressed a significantly higher desirability for salary caps, and third, they were far less concerned with a possible decrease in broadcasting revenues, which might indicate openness towards a potential change in the industry.

Another group with three distinguishing viewpoints was the participants with knowledge of strategy. The results indicate that this group expected broadcasting revenues to decrease earlier and transfer fees to remain below the pre-COVID-19 level for a longer period. Hence, it could be concluded that experts experienced in strategy tended to respond more reservedly with regard to those two economic projections. In accordance with this perception, on average, the subset rated the impact of a quick recovery of sponsorship revenues higher than their peers, which demonstrates their special attention to financials. In the same vein, participants with sales experience expressed an above-average desire for sponsorship revenues to recoup, although they were far less optimistic that stadium attendance would reach pre-lockdown numbers quickly – perhaps because the effective stadium attendance demand in some European football leagues was already in decline before the lockdown (Schreyer, 2019), or because they anticipated a stigmatizing effect of the pandemic leading to a long-term avoidance of large crowds (Katafuchi et al., 2020; Kurita and Managi, 2020). Not surprisingly, participants with expertise in sponsoring also had an exposed view on sponsorship developments. Together with marketing-savvy experts, they anticipated that sponsorship revenues would return to

Table 6
Sentiment analysis - expertise.

Expertise area	Projection	Dimension	Expertise		No expertise		U	p
			n	mean	n	mean		
Digital	3 *(salary cap)*	D	22	3.7	82	3.0	619	.020
	5 *(broadcasting revenues)*	D	22	2.3	81	1.8	607	.015
	11 *(clubs' bankruptcy)*	I	22	3.1	86	3.6	1267	.001
Strategy	5 *(broadcasting revenues)*	EP [a]	37	Q3/21	19	Q1/22	477	.028
	6 *(sponsorship revenues)*	I	67	3.8	41	3.2	970.5	.005
	8 *(transfer fees)*	EP [a]	59	Q3/22	36	Q3/21	579.5	<0.001
Sales	6 *(sponsorship revenues)*	D	24	4	72	3.4	622.5	.032
	10 *(stadium attendance)*	EP [b]	28	28%	79	46%	1554	.001
Sponsoring	4 *(investors' shares)*	EP [b]	30	45%	78	57%	1510.5	.018
	6 *(sponsorship revenues)*	EP [a]	27	Q1/22	72	Q3/22	1344.5	.003
Marketing	6 *(sponsorship revenues)*	EP [a]	33	Q1/22	66	Q3/22	1531	.001
	15 *(personalized advertising)*	I	32	3.2	72	2.9	891	.049
Internationalization	3 *(salary cap)*	EP [c]	35	63%	71	41%	969	.034
	4 *(investors' shares)*	EP [b]	36	65%	72	48%	775	.001
	7 *(player contracts)*	EP [a]	24	Q2/21	46	Q4/21	720.5	.034

Note. EP [a] = expected time of occurrence for flexible projections and valuation of short- to medium-term occurrence (i.e., before end of 2024); EP [b] = expected probability of occurrence for fixed projections; EP [c] = expected probability occurrence for flexible projections; I = impact in case of occurrence; D = desirability of occurrence.

pre-COVID-19 levels earlier than the rest of the Delphi panel predicted. Thus, the sponsoring subset appeared to be less concerned with potential revenue shortfalls, which might also explain why they judged an increase in investors' shares to be rather unlikely. A subset of experts that, on the contrary, considered increased investors' shares in European football clubs to be rather likely is the group with expertise in internationalization. This group also assessed a salary cap as possible and believed that player contracts would move quickly towards a performance-based model. This perception could be explained by an increased exposure to non-European sports leagues, such as the US-based National Football League (NFL), which tend to have the characteristics explained above, i.e., franchise structures, salary caps, and performance-based player contracts.

Finally, with regard to technological developments, marketing experts attributed a higher impact to fully personalized advertising, which appears reasonable, assuming that this technology would provide more opportunities for marketers to position their brand effectively.

4.3.2. . Level of confidence

While experience and expertise generally represent an expert's knowledge on a meta level, we also collected information about the subjective knowledge on each projection (Rowe et al., 2005). To understand the interrelation between the level of confidence and expected probability assessments, we conducted chi square tests for all flexible projections and calculated correlations for all fixed projections (von der Gracht, 2012). Among the flexible projections, we only found one marginally significant difference ($p = .069$) for projection 3 (*salary cap*), showing that experts with high levels of confidence ($C > 3$) more frequently expected that salary caps would never occur in European football. For fixed projections, meanwhile, we found three projections with a positive correlation between C and EP, which were projections 4 (*investors' shares, $r = 0.29$, $p = .003$*), 11 (*clubs' bankruptcies, $r = 0.37$, $p < .001$*), and 12 (*social responsibility, $r = 0.23$, $p = .017$*). Thus, experts with higher confidence for these projections expected a higher probability of occurrence. Notably, for projection 11 (*clubs' bankruptcies*), experts with high confidence reached in-group consensus with an IQR of 20% and an average EP of 72.2%.

4.3.3. . Level of optimism

To test for the impact of optimism on our Delphi assessments (Loye, 1980), we posed two dedicated questions at the end of the survey, which helped to distinguish between more optimistic and more pessimistic experts. Therefore, we calculated the sum of both responses for each participant to derive an overall score for the individual level of optimism. We then conducted a median split and assigned all participants with a sum equal to or greater than eight to the more optimistic subset ($n = 59$) and all experts with a sum smaller than the median value of eight to the more pessimistic subset ($n = 50$; Maxwell and Delaney, 1993).

Based on statistical mean value comparisons, we found a series of significant differences between both groups, as displayed in Table 7. As an emerging pattern, it could be observed that optimists consistently gave higher scores for all dimensions of the projections. These findings correspond with previous research, which has found that "optimism has a positive influence on generalized outcome expectancies for future events" (Felton et al., 2003, p.34).

4.3.4. Positive and negative affect

Given the special situation of the COVID-19 lockdown, we also aimed to account for the participants' subjective wellbeing (Spickermann et al., 2014). Therefore, we first calculated the individual affect balances prior to (AB_{t1}) and during the lockdown (AB_{t2}) and found that participants on average reported a significantly more negative affect balance during the lockdown ($M_{diff} = 0.83$, $t(108) = 10.55$, $p < .001$). To conduct further statistical tests, we then calculated the affect balance difference ($AB_{diff} = AB_{t2} - AB_{t1}$) to understand if individual experts were more or less

Table 7
Sentiment analysis – level of optimists.

Projection	Dimension	Optimists		Pessimists		U	p
		n	M	n	M		
3 (*salary cap*)	EP [a]	57	60%	49	35%	1048	.011
4 (*investors' shares*)	EP [b]	58	58%	50	49%	1130.5	.046
7 (*player contracts*)	I	54	3.5	50	3.0	1008.5	.017
9 (*number of employees*)	I	55	3.1	47	2.7	995.5	.034
12 (*social responsibility*)	EP [b]	59	67%	50	49%	843.5	<0.001
	I	56	3.2	46	2.6	807	.001
	D	58	4.4	50	4.0	1105	.022
13 (*eSports activities*)	EP [a]	58	100%	46	91%	1218	.023
	D	57	3.1	46	2.7	1021	.043
14 (*remote training*)	D	59	2.8	48	2.3	1058.5	.021
15 (*personalized advertising*)	D	58	58%	50	48%	703.5	<0.001

Note. EP [a] = expected probability of occurrence for flexible projections; EP [b] = expected probability of occurrence for fixed projections; *I* = impact in case of occurrence; *D* = desirability of occurrence.

affected by the lockdown. With respect to expected probability, we found that the affect balance difference correlated positively ($r = 0.27$, $p = .005$) with the assessment of projection 12 (*social responsibility*). Thus, the higher the affect balance difference, the higher the participants estimated the likelihood that clubs and players would sustain a strong awareness of their social responsibility beyond the acute phase of the COVID-19 crisis. Further correlations were found with regard to the impact assessments of projections 10 (*Stadium attendance, $r = 0.24$, $p = .01$*), 12 (*social responsibility, $r = 0.31$, $p = .001$*), and 13 (*eSports activities, $r = 0.21$, $p = .04$*), which were all positively correlated with the affect balance difference.

5. Scenarios and discussion

The fuzzy clustering approach led to three clusters consisting of five, four, and six projections. Table 8 shows the individual degrees of membership (between 0 and 1) for all projections and clusters, which are graphically displayed in Fig. 5 (Bezdek et al., 1984). A visual inspection indicates that the clusters are strongly characterized by the corresponding rating on the desirability dimension. We consider this

Table 8
Degree of membership for FCM clustering.

Projection	Degree of membership and projection assignment		
	Cluster 1	Cluster 2	Cluster 3
Regulatory			
1: Disaster regulations	0.0035	0.0172	**0.9793**
2: Match calendar	0.0587	**0.8209**	0.1204
3: Salary cap	0.1587	**0.5935**	0.2478
Economic – revenue			
4: Investors' shares	**0.4871**	0.3718	0.1411
5: Broadcasting revenues	**0.7824**	0.1534	0.0642
6: Sponsorship revenues	0.0592	0.2281	**0.7127**
Economic – cost			
7: Player contracts	0.0132	0.0841	**0.9028**
8: Transfer fees	0.1447	**0.5766**	0.2787
9: Number of employees	**0.7155**	0.1848	0.0997
Social			
10: Stadium attendance	**0.9477**	0.0361	0.0163
11: Clubs' bankruptcy	**0.8665**	0.0831	0.0503
12: Social responsibility	0.0674	0.1983	**0.7343**
Technological			
13: eSports activities	0.1207	0.3635	**0.5159**
14: Remote training	0.2349	**0.4286**	0.3365
15: Personalized advert.	0.0086	0.0390	**0.9524**

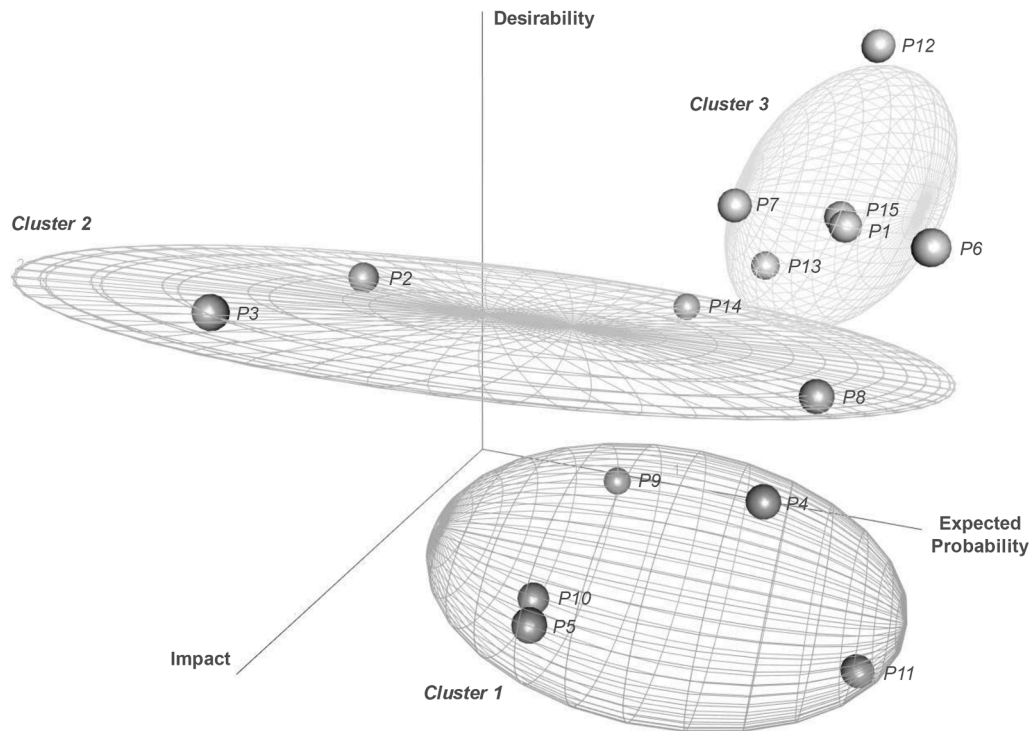*Note.* Projection assignment is marked in bold.

Fig. 5. Clusters based on fuzzy c-means algorithm.

insight in the following discussion.

5.1. Cluster 1: potential threats arising from COVID-19

The first cluster contains five projections *(4: investors' shares, 5: broadcasting revenues, 9: number of employees, 10: stadium attendance,* and *11: clubs' bankruptcies)* that were all valuated with a low degree of desirability. Therefore, these topics can be seen as potential threats to the European football ecosystem caused by the consequences of COVID-19. A review of the impact axis of the three-dimensional visualization also reveals that the first cluster centroid is positioned higher than the others, indicating that participants expected a higher impact if these threats became reality. This finding is in line with existing research stating that negative events tend to be more salient and induce a higher amplitude in response (Ito et al., 1998).

Looking at the specific projections of this cluster, it is evident that it includes neither a projection from the regulatory dimension nor from the technological topic area. Instead, experts anticipated that COVID-19 would mainly threaten the economic and social levels of the European football ecosystem. In a realistic but highly undesirable scenario (EP of 66.3% and D of 1.4), financial threats might lead to bankruptcies for about 10% of the lower-league clubs. According to Delphi experts, smaller clubs face higher risks because they are often sponsored by local small- and medium-sized enterprises, which could avoid sponsorships in order to secure their core business. Some participants hoped for solidarity within the system to save clubs, as they otherwise see an increased chance of investors acquiring more shares in European football clubs; experts also did not prefer this scenario (EP of 53.5% and D of 2.4). To allow for solidarity, steady incomes would be important. Therefore, a decrease in broadcasting revenues would pose a severe problem to the ecosystem, which participants confirmed with the second-highest impact valuation of all projections (I of 4.0). At the same time, experts rated the occurrence of a decrease in broadcasting income rather unlikely, arguing that broadcasting will become even more important in a more digital future. Hence, unless media companies begin struggling immensely, participants estimated that this source of income would be

stable and reliable. In the same vein, participants on average did not anticipate a long-term decrease in stadium attendance due to the consequences of COVID-19, although social distancing measures have to be considered major short-term challenges for clubs and leagues when dealing with spectators as economically relevant stakeholders in the industry (Yoo and Managi, 2020). Consequently, as long as the main revenue streams from media and matchday are not severely at risk in the long run, clubs should be able to maintain their number of employees. Although some experts saw a need for improved efficiency through a reduced headcount, the majority argued that the organizations at the core of the ecosystem, such as clubs and leagues, would not lay off employees for two reasons. On the one hand, experts argued that the monetary lever is limited regardless, comparing the commercial staff payroll to the player payroll. On the other hand, there are ways to reallocate employees to other tasks or overcome the crisis with governmental aid until operations return to normal.

In conclusion, it can be said that the Delphi panel saw most of the post-COVID-19 threats as having an economic dimension. If the system is able to handle financial challenges well, the negative effects on the social level could be contained.

5.2. Cluster 2: ambiguous effects caused by COVID-19

The second cluster that emerged from the FCM includes four projections *(2: match calendar, 3: salary cap, 8: transfer fees,* and *14: remote training)* that are unified by a highly similar average evaluation of desirability, indicated by the flat shape of the ellipsoid in Fig. 5. Among the contained projections are two with regulatory implications: the reduction of fixed games in the international match calendar and the introduction of a salary cap for European football clubs. Experts rated both projections as rather unlikely to occur. With respect to the match calendar, they argued that there will be some inevitable adjustments in the short term, but a return to normal is expected by 2022. A predominant theme for this judgement participants mentioned was the financial interests of relevant international stakeholders, such as FIFA and UEFA, which might even lead to an increase in fixed games in the future.

Similarly, experts could not imagine a salary cap being introduced because this would require uniform regulations across European football leagues and a common interest among more and less wealthy clubs, which seemed doubtful to our experts. In fact, it was the fixed projection with the lowest average value for EP, 23.9%. It is noteworthy, though, that the experts rated the introduction of a salary cap as the most impactful and as having a slightly positive desirability.

An above-average impact (I of 3.5) was also assigned to projection 8 (transfer fees). Experts estimated that transfer fees would reach the pre-COVID-19 level by mid-2021, arguing that competition for the best players will remain fierce, thus leading to a quick increase of transfer volumes after a small dip in 2020. However, some participants also envisioned a steady and long-term decrease in transfer volumes, particularly for clubs that are not in the top tier of European football. In these cases, the experts argued that clubs should build cash reserves rather than taking financial risks through high transfer fees.

The last projection in the first cluster relates to individual remote training, and most experts agreed that the implementation of such technologies would not have a dominant impact on the ecosystem. As mentioned earlier, only the subgroup of academics showed strong engagement with this idea, whereas all other stakeholder groups were skeptical in terms of probability and desirability. The majority of experts had concerns regarding the efficiency of remote training and noted the importance of training as a team. If at all, the experience with individual remote training during the COVID-19 lockdown might support injured players during recovery in the future or supplement workout plans, and it could be interesting for the coaching staff of national teams to interact with players more frequently via remote technologies.

In sum, experts did not expect much change related to the topics addressed in cluster 2. This may be due to conflicts of interest regarding regulatory developments or simply an anticipated return to the past, given the established structures and habits within the industry.

5.3. Cluster 3: potential opportunities arising from COVID-19

The last cluster consists of six projections *(1: disaster regulations, 6: sponsorship revenues, 7: player contracts, 12: social responsibility, 13: eSports activities,* and *15: personalized advertising)* that represent potential opportunities for the European football ecosystem across all dimensions of the REST framework. From a regulatory angle, experts would appreciate rules that require clubs to guarantee administrative operations in case of unforeseen disasters (average D of 3.4), and a majority also expected short-term action. This was underpinned by the results of our cross-impact analysis, in which we saw that new regulations would reinforce other subjects, such as flexible player contracts or socially and economically sustainable structures in clubs. As possible measures, participants mentioned new or adjusted conditions in the licensing procedure or mandatory insurance coverage for clubs. However, opposing votes also argued that clubs might protest such regulations and that the leagues should ensure financial provision in emergency situations.

In terms of the economic effects of COVID-19, experts were positive about a quick recovery of sponsorship revenues, particularly for clubs in the highest domestic divisions. While participants expected that some sponsors would reduce their sponsoring budget in the near future, they also anticipated that new brands would enter the sports-sponsoring market with innovative sponsoring approaches. Thus, clubs would need to be open to new approaches, such as fully personalized advertising, for instance. Although experts could not agree on when such a technology would become reality, the vast majority assumed it would be possible at some point, and the best-prepared clubs could generate significant revenues from this innovation. Similarly, eSports activities could be a way to diversify the revenue portfolio (Holzmayer and Schmidt, 2020). However, as already mentioned, experts do not see a significant turnover through competitive gaming in the near future. In particular, eFootball – that is, competitive gaming with football

simulations such as *FIFA* or *Pro-Evolution Soccer* – was judged with skepticism by the Delphi panel due to limited cash volumes. Other eSports titles, such as *League of Legends* or *Dota2*, have much higher revenue and sponsorship pools but would mean an engagement that is less related to the core business of football clubs. In these cases, experts were doubtful if clubs would truly be able and willing to invest in the short term, given the financial pressure the lockdown and its consequences have caused.

On the cost side of economic effects, experts expressed a bipolar picture with regard to player contracts. While a group of participants argued that performance-based player contracts would reduce risks for clubs and allow for higher flexibility, others countered that players and their agents had the highest bargaining power in the ecosystem and could thus determine contract details. Financial Fair Play or domestic regulations also played a role in the Delphi discussion; however, the majority did not see common ground to force performance-based clauses into player contracts. One way or another, flexible player contracts could be a reactive response, either due to new regulations or due to limited financial resources, which goes hand in hand with the results of our cross-impact analysis (see Fig. 3).

On a social level, experts strongly hoped that clubs and their players would maintain a higher awareness of their social responsibility compared to the pre-COVID-19 period and expressed this with the highest average desirability among all projections (D of 4.2). While a majority of experts argued that the disease initiated a shift in mindset, others expressed concern about a rapid return to normal and worried that the increased focus on social activities within the industry would vanish. However, many participants named constant societal expectations, as well as pressure, as one way to keep the awareness high.

All aspects considered, the Delphi panel identified opportunities for the European football ecosystem to overcome the crisis and potentially emerge stronger with respect to financial and social sustainability.

6. Conclusion

This paper presents multifaceted insights into the question of how COVID-19 will impact the European football ecosystem in the short, medium, and long term. The Delphi-based scenario approach allowed the investigation of 15 future-oriented projections in detail and the discussion of three overarching future scenarios. The results reveal a set of topics clustered into "potential opportunities arising from COVID-19." While most of these potential developments with regard to regulatory, economic, social, and technological changes are desirable in the view of our expert panel, not all participants assess them as very likely to occur. Against this backdrop, we provide a comprehensive data base for decision-makers to further discuss these areas of interest and to develop strategies to accelerate or facilitate these favorable future developments. Similarly, for the cluster of "potential threats arising from COVID-19," we initiate a dialog on how to prevent or mitigate negative effects of the pandemic outbreak.

As a matter of course, our research is not without limitations. In view of the unique situation caused by COVID-19, it is difficult to account for all factors that might have influenced our experts' valuation behavior. For instance, the severity of the pandemic outbreak differed from country to country during the survey period, with particularly high death rates in Italy, Spain, France, and the United Kingdom (Stöhr and Stolz, 2020). Among other reasons, this might explain a relatively low response rate from these countries. Hence, we were not able to conduct country comparisons within our analyses, which might have revealed additional insights. However, despite a disproportionally high share of experts originating from Germany, we could not identify significant differences between German and non-German subsets of our sample. Moreover, we did not have dedicated crisis researchers or virologists in our sample; however, we included consultants and academics with an educational background in healthcare and the medical sector.

Another limiting aspect worth mentioning is the fact that the results

of the Delphi survey might be difficult to generalize. However, some projections (especially from the social dimension) might be transferred to other contexts, such as the gastronomy, travel, or event industries. In addition, the results present a snapshot of the COVID-19 outbreak, which means that participants could not confidently anticipate the development of vaccines, for instance. Therefore, further research on shifting assessments due to new insights about the virus and its socio-economic impact worldwide would be valuable (Gharehgozli et al., 2020; Mandel and Veetil, 2020).

In general, conducting this research during the time of the COVID-19 outbreak (i.e., a time of the highest ambiguity for all stakeholders of the European football ecosystem) delivered both practical and theoretical insights regarding the application of future-oriented research under uncertainty. On the one hand, the Delphi technique enabled an online discussion in the midst of the crisis, involved subject matter experts from diverse backgrounds, and generated positive feedback from all partici-pants (Reed et al., 2009). Thus, a sophisticated handling of this meth-odology can bring advantages for policy makers and organizations to improve their crisis response and preparedness (Carmeli and Schau-broeck, 2008; Fowler et al., 2007). In this regard, the European football ecosystem could indeed serve as a role model, as it was among the pi-oneers for advanced hygiene concepts and flexible event-planning ca-pabilities. This holds true not only for other sports, but also for other industries that build their business models on gathering large crowds. Furthermore, the Delphi-based scenario development offers a concise summary of our findings, allowing a wider audience to engage in the discourse with both a practical and theoretical motivation.

Besides the contextual contribution, this paper also adds methodo-logical insights. To the best of our knowledge, no other paper contains and combines the various analytical angles on a Delphi-based dataset, including content analysis, cross-impact analysis, dissent analysis (containing analyses of desirability bias, outliers, bipolarity, and stakeholder groups), sentiment analysis, and scenario analysis. This also leads to implications for future research, where three main aspects emerge. First, the impact of individual sentiments on expert valuations should continue to be examined in Delphi studies, as we were among the first to operationalize these insights. While we tried to find a balance between scientific correctness and practical feasibility to gain informa-tion about participants' deep-level characteristics, the set of associated questions could be further expanded. Second, Delphi-based scenarios should be used both in research and practice to include heterogeneous stakeholder views in a relatively short amount of time. This is especially valuable in periods of high uncertainty. Given the ever-increasing pace of the technological change and digital transformation of the world, this becomes progressively important. Last, sports should become a subject of investigation for broader socioeconomic research questions, as the industry is not only established in terms of economic significance in many parts of the world, but it also entails high public awareness and social relevance.

CRediT authorship contribution statement

Daniel Beiderbeck: Conceptualization, Methodology, Software, Formal analysis, Investigation, Writing - original draft, Writing - review & editing, Visualization, Project administration. **Nicolas Frevel:** Conceptualization, Methodology, Formal analysis, Investigation. **Heiko A. von der Gracht:** Conceptualization, Methodology, Writing - original draft, Writing - review & editing, Supervision. **Sascha L. Schmidt:** Conceptualization, Methodology, Supervision. **Vera M. Schweitzer:** Formal analysis, Data curation, Visualization, Writing - review & editing.

Declaration of competing interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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