

Designing a Sports Fan Value Creation Model in the Metaverse Using a Fuzzy Structural Interpretive Approach

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Abstract

This research was conducted with the aim of designing a fan value creation model in the metaverse space for Iranian Premier League football clubs using the fuzzy interpretive structural modeling approach. The research method was exploratory mixed in two sequential stages. In the qualitative stage, value creation components were identified through in-depth interviews with eighteen academic experts, club managers, and technology specialists. In the quantitative stage, using fuzzy interpretive structural modeling technique and the opinions of fifteen experts, the causal relationships and leveling of components were analyzed. Fuzzy calculations and defuzzification were performed using Excel 2019 software, MICMAC analysis and chart drawing using MATLAB 2021. The findings led to the identification of six main dimensions including experiential, social, economic, entertainment, informational, and participatory values in the form of twenty-four sub-components. The fuzzy interpretive structural model showed that digital assets and non-fungible tokens, interactive games, and access to real-time data, as independent variables with the highest driving power, play the main driving role. MICMAC analysis identified three categories of independent, linkage, and dependent variables, indicating a complex hierarchical structure of value creation. By providing an operational roadmap, this study contributes to expanding theoretical knowledge in the field of digital sports marketing and provides a strategic guide for Iranian sports club managers to exploit metaverse opportunities.

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Extended Abstract

Introduction

In recent years, the professional sports industry has undergone fundamental transformation in the way fans interact with teams and athletes due to emerging technologies; in such a way that, in addition to changing the pattern of sports content consumption, these technologies have provided new grounds for forming fan identity and creating mutual value between clubs and fans (Ratten, 2020). In this regard, the metaverse, as an emerging technological innovation, provides the sports industry with the possibility of redefining fan experience through immersive and interactive digital spaces. The metaverse is a network of shared digital spaces that, by utilizing virtual reality, augmented reality, and blockchain, enables simultaneous interaction between users and sports brands through digital avatars (Hadi et al., 2023). The metaverse has high potential in the sports industry; but in Iran, this technology is not properly utilized. Traditional interaction models such as attending stadiums and purchasing merchandise no longer meet the needs of today's digital fans. International clubs have generated new revenues through the metaverse by selling non-fungible tokens, virtual experiences, and exclusive content (Shahsavandi et al., 2025), but Iranian clubs are still at the beginning of recognizing these opportunities. Prioritizing multi-channel technologies such as mobile and social media increases shared value in virtual interactions and metaverse spaces for sports fans (Maleki MinbashRazgah et al., 2025). A fan value creation model in the metaverse space can, by utilizing conceptual and practical innovations, provide practical solutions to existing challenges. Using non-fungible tokens as a tool to create direct and unique connections between fans and clubs (Barrera & Shah, 2023), designing immersive fan experiences using virtual and augmented reality technologies (Baker et al., 2022), and emphasizing value co-creation through fan participation in decision-making and user-generated content (Aliabadi & Bagheri, 2022) are among the innovations that can bring new economic and social value to fans and clubs. Accordingly, the main research question is: What is the fan value creation model in the metaverse space using the fuzzy interpretive structural approach in Iranian Premier League football clubs?

Theoretical Framework

Despite the growing importance of the metaverse in the sports industry and significant developments in the way fans interact with clubs and athletes, considerable gaps are observed in the research literature. A review of international studies shows that despite limited research in the field of metaverse and sports (Chohan & Schmidt-Devlin, 2024; Morgan & Kerr, 2025; Soliman, 2025), no comprehensive study specifically addressing the identification and modeling of fan value creation factors in the metaverse with a structural approach has been found. Existing studies have mostly focused on specific aspects such as virtual stadiums, immersive experience, or adoption motivations and lack a comprehensive and systematic view of various value creation factors and causal relationships among them. Additionally, existing reviews indicate that previous studies have mostly focused on theoretical and conceptual aspects of the metaverse, with limited empirical evidence in its application in the sports industry. This research, in addition to considering existing theoretical concepts, has addressed empirical evidence and data obtained from qualitative and quantitative methods to develop a fan value creation model in the metaverse based on real and practical experiences. In the domestic context, a similar situation is observed. Conducted research in the field of sports fandom in Iran has mostly focused on traditional social media such as Instagram (Derakhshan et al., 2025; Aliabadi & Bagheri, 2022). Only one exploratory study has addressed identifying challenges and opportunities of the metaverse in sports (Habibi & Eydi, 2024), but no study specifically modeling fan value creation in the metaverse was found. This

research gap is felt more in a situation where international clubs are making extensive investments in the metaverse.

Research Methodology

This research was conducted with an exploratory mixed approach in two stages: first, through semi-structured interviews with 18 academic and industrial experts in the fields of sports management, marketing, and metaverse technology, fan value creation components in the metaverse space were identified using theme analysis and three-stage coding method; then, in the second stage, using fuzzy interpretive structural modeling technique and a survey of 15 specialized experts, the causal relationships and leveling of these components were analyzed. To ensure validity and reliability, various methods such as member feedback, inter-coder agreement with 85% agreement, use of experts with different specialized backgrounds, and calculation of matrix inconsistency rate were used. Finally, using the reachability matrix, component leveling and MICMAC analysis, the value creation structural model was designed in which causal, linkage, dependent, and autonomous factors were categorized.

Research Findings

In the qualitative stage of the research, six main dimensions of value creation including experiential, social, economic, entertainment, informational, and participatory values were identified, detailed in the form of twenty-four sub-components. Frequency analysis of extracted codes showed that economic value with 156 codes and 17.81% attracted the most attention from experts, revealing the strategic importance of financial aspects of the metaverse for clubs and fans. Among the sub-components, digital assets and non-fungible tokens with 51 codes, virtual stadium attendance experience with 47 codes, and interactive games with 46 codes ranked at the top, indicating key priorities in developing metaverse solutions. In the quantitative stage, using fuzzy interpretive structural modeling, complex causal relationships between components were identified, and a hierarchical model with thirteen levels was drawn in which some components appear as contextual and driving factors and others as outcomes and final results. MICMAC analysis identified three components—digital assets and non-fungible tokens, interactive games, and access to real-time data—as independent variables with the highest driving power, acting as driving and foundational factors in the model with the greatest influence on other components.

Conclusion

This study shows that value creation in the metaverse is a multidimensional phenomenon that cannot be limited to one or two specific aspects. Additionally, value creation in the metaverse is a staged process in which some components act as prerequisites and drivers, while others appear as outcomes and results. The results of this research are aligned with international studies but also provide new aspects. Morgan & Kerr (2025) emphasized the role of the metaverse in redefining sports consumption, and the findings of the present research elaborate this concept by identifying specific components and causal relationships among them. Compared to domestic studies, the present research goes beyond identifying challenges and opportunities (Habibi & Eydi, 2024) or examining the effects of social network marketing (Derakhshan et al., 2025) and provides a comprehensive model of value creation in the specific metaverse space. Additionally, compared to the study of Ghavipankeh & Kalateh Seifari (2025) which focused on women's football, this research examines the unique nature of the metaverse by focusing on emerging technologies such as non-fungible tokens, virtual reality, and blockchain. This research offers important practical suggestions for managers of Iranian Premier League football clubs. Clubs should consider investment in blockchain

technology and non-fungible tokens as a strategic priority, as this technology, in addition to creating new revenue streams, strengthens fans' emotional bonds through digital ownership. Developing high-quality interactive games, creating strong infrastructure for collecting and presenting real-time data, and designing a comprehensive strategy for nurturing virtual fan communities are other key recommendations.

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Conflicts of Interest

The authors declare that they have no financial or non-financial, personal, professional, or institutional conflicts of interest relevant to this work.

Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

AI Use Statement

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Ethics Approval

All procedures performed in this study were conducted in accordance with the ethical standards of the responsible institutional and national research committee.