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A Multi-Dimensional Model Integrating Social Influence and Brand Performance: An Empirical Study on the Commercial Value of CBA Players

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Abstract:

With the rapid advancement of China's sports sector and the increasing professionalization of the Chinese Basketball Association (CBA), the market value of elite basketball athletes has drawn wide attention in both scholarly and commercial fields. Existing studies, however, have mostly emphasized sporting performance and public visibility, while paying less attention to the significance of online influence and sponsorship outcomes in shaping players' overall value. Taking CBA athletes as the research sample, this paper develops a multi-dimensional assessment framework that integrates sporting indicators, social influence, and brand partnership effectiveness. Methodologically, the research adopts a mixed approach combining literature review, factor and regression analysis, along with case comparisons of influence-oriented and performance-oriented players. The findings indicate that athletes with stronger online influence secure more collaborations and broader exposure, whereas technically skilled players show higher efficiency in premium endorsements and stable value accumulation. Moreover, a significant correlation exists between online presence and sponsorship numbers, as well as a moderate positive link between performance indicators and brand premium capacity. The results demonstrate that incorporating social and brand dimensions yields a more comprehensive picture of athlete market value, offering theoretical refinement and practical guidance for agencies, brands, the league, and players themselves in strategic planning.

Keywords: CBA; athlete market value; online influence; sponsorship performance.

1. Introduction

China's sports industry is shifting from rapid expansion to a focus on sustainable value creation. Basketball, with its wide audience base and mature league system, has become one of the most commercialized sports. As the CBA's audience structure, media environment, and content ecosystem evolve, athletes are increasingly positioned as central figures—both as competitors and as commercial assets. Assessing athlete market value directly influences salary negotiations, brand investment, and league revenue distribution [1]. Nevertheless, most evaluation models still emphasize on-court performance and exposure metrics, neglecting indicators of online engagement and brand partnership, which makes it difficult to capture new value growth driven by digital and social ecosystems [2].

In the Chinese setting, the commercial landscape and consumer culture differ markedly from overseas markets, highlighting the need for a localized measurement framework to avoid biases from applying foreign models [3,4]. At the theoretical level, this paper introduces an integrated structure combining performance, social, and brand dimensions, building upon brand equity and sports marketing perspectives. This model addresses the limitations of performance-centered approaches while contributing to localized measurement methodologies [5,6]. On the practical side, the results of this study can provide data-based tools for agencies in athlete image management and contract design, assist brands in endorsement decisions and budget allocation, and offer quantitative references for the league in policy making and revenue sharing [7,8].

The aim of this research is to design and validate the P-S-B model, which unifies performance, social, and brand indicators in a comprehensive system. Using factor analysis to identify indicator loadings, regression to estimate weights, and case studies for empirical testing, the study pursues three main objectives: first, to verify whether the addition of social and brand measures improves explanatory strength; second, to reveal the differences in value generation between influence-oriented and skill-oriented players; and third, to develop practical recommendations for industry stakeholders. The guiding research questions include: which dimensions should be measured, how to assign and aggregate weights, and in what ways can the results inform real-world applications [2,9,10].

2. Literature Review

2.1 Traditional Evaluation: Focusing on Athletic Performance and Exposure

Early studies measured athlete value through sporting performance, honors, and visibility. The underlying assumption was that on-court performance shapes reputation, which in turn generates financial returns. This framework parallels the stages of awareness, association, and loyalty in brand equity theory [5]. However, it lacks explanatory power for fan-driven premium phenomena and digital conversion mechanisms [11].

2.2 Incorporation of Social Influence

With the growth of digital platforms, the mechanisms of value creation have shifted. Engagement frequency, user participation, and secondary dissemination have become critical drivers of communication effectiveness [2]. Athletes can directly connect with audiences, shortening the path from attention to purchase intention. Indicators such as follower counts, interaction ratios, and topic popularity are now central to athlete value assessment [2,9]. Research shows that online discourse and content consistency significantly enhance sponsorship effectiveness, shifting focus from exposure volume to engagement depth [9].

2.3 Manifestation of Brand Collaboration Performance

Endorsements serve as the main interface between athletes and brands, reflecting both recognition and conversion ability. Evaluation dimensions include number of deals, brand tier, communication effectiveness, and stability of collaboration [6]. Distinguishing short-term exposure gains from long-term equity accumulation is essential [7].

2.4 Domestic Research and Gaps

Within the CBA context, prior research has investigated commercialization trends and player value drivers [1]. Yet, comprehensive frameworks remain scarce, especially regarding integration of social and sponsorship data [3]. This highlights the urgency of building models aligned with China's platform ecosystem and investment patterns [4].

Collectively, the literature suggests a need for a composite index that simultaneously captures athletic, social, and brand dimensions to balance short-term exposure benefits with long-term equity building [2,5,6].

3. Research Methodology and Case Analysis

3.1 Research Framework and Hypotheses

Based on literature and market logic, this study proposes the P-S-B framework. It hypothesizes that online influence positively correlates with sponsorship quantity, and that sporting performance positively influences premium endorsement potential [2,5,6,9]. The integrated index is ex-

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pected to be shaped by P, S, and B, with varying weights across athlete types [7,3].

3.2 Variables and Indicators

Performance (P).points, assists, defense efficiency, honors, and team contributions.
Social (S). followers, engagement rate, posting activity, topic heat, and cross-platform dissemination.
Brand (B).endorsement count, tier, exposure, conversion, and stability.
Control variables: age, position, injuries, and market size [1,3].

3.3 Data Sources and Sample

The research sample covers CBA players across three seasons from 2021 to 2024. To ensure representativeness and operability, players with fewer than 20 appearances were excluded, resulting in a valid sample of 120 players. Athletic data were primarily obtained from the CBA league‘s official statistics platform, including metrics such as points, assists, defensive efficiency, playing time, and honor records. Social data were collected via public APIs from Sina Weibo and Douyin, covering fan count, interaction rate, post frequency, and heat of topic. Brand data came from the Ruisports database and financial media disclosures, including endorsement quantity, brand tier, collaboration duration, and communication coverage.
The data underwent missing value imputation and outlier winsorization to mitigate the impact of extreme values. After processing, all continuous variables were standardized to facilitate comparison in factor analysis and regression models. The data sources and selection methods referenced practices in domestic research on CBA players‘ commercial value, ensuring reasonable data acquisition and feasible research design [1,3].

3.4 Preprocessing and Reliability

Before empirical analysis, reliability and adaptability tests were conducted on the selected indicator system. Internal consistency tests showed a Cronbach‘s α value of 0.823, exceeding the recognized threshold of 0.7, indicating good internal consistency. Adaptability tests yielded a KMO value of 0.791, and Bartlett‘s sphericity test produced a chi-square value of 963.42 with a significance level of $p<0.001$, confirming the suitability of the sample data for factor analysis.
In regression analysis, robustness checks were performed. First, regression was rerun after excluding the top and bottom 1% of extreme values, with results consistent with the baseline model. Second, alternative indicators (e.g., replacing points per game with player efficiency rating, and brand quantity with collaboration duration) were used in regression, and the direction and significance of coefficients remained substantially unchanged. Finally, subgroup regression was conducted for influence-based and skill-based players, with results largely consistent with the overall model. These tests indicate that the model has good robustness and explanatory power.

3.5 Statistical Methods and Weight Estimation

Exploratory factor analysis was used to derive dimension scores. Ordinary least squares (OLS) regression was applied to estimate the contribution of each dimension to commercial value, measured by standardized endorsement income. Variance inflation factors (VIF < 5) confirmed absence of multicollinearity, and heteroscedasticity was addressed using HC3 robust standard errors [9,7].

3.6 Ethical Compliance and Data Security

Only public data were used, avoiding sensitive personal information; commercial metrics involving corporate brands were expressed using intervals or proxy variables; results are solely for research and teaching purposes and do not constitute investment or business decision-making advice.

4. Theoretical Model Construction

This paper proposes the P-S-B Model:
P (Performance): Reflects on-court achievements;
S (Social Influence): Embodies influence on social platforms;
B (Brand Performance): Measures the effectiveness of commercial collaborations.

4.1 Index Structure

Let the three-dimensional factor scores be P, S, and B, with weights obtained through regression normalization as wP, wS, and wB.
To ensure comparability, the final BV is mapped to a percentile or tenth unit interval, providing a relative ranking within the league.

4.2 Weight Identification

Considering structural differences between player types, weights were estimated separately for influence-based and skill-based samples in addition to the full-sample regression. If Wald tests indicated significant differences in coefficients between groups, group-specific weights were applied in practical scenarios to improve explanatory power and fairness [7,3].

4.3 Indicator Calibration and Examples

For example, the S-dimension factor score of an influence-based player is dominated by „fan count (log)—interaction density—spillover dissemination,“ while the

B-dimension score is more contributed by „quantity—exposure." For a skill-based player, the P-dimension is driven by „efficiency—stability," and the B-dimension is primarily influenced by „brand tier—stability." Differences in weights and pathways between the two player types form the basis for subsequent strategic recommendations [2,9,7].

5. Research Results and Discussion

5.1 Single-Dimension Comparison

As shown in Table 1, influence-based players demonstrate a strong advantage in terms of social influence, with a large fan base and high interaction frequency, while skill-based players maintain higher interaction quality despite a smaller audience. In terms of brand performance, influence-based players achieve broader brand coverage but face volatility in conversion rates, whereas skill-based players display more stable outcomes with high brand concentration. Regarding athletic performance, influence-based players often rely on media-driven popularity, while skill-based players consistently deliver excellent technical indicators. Overall, as Table 1 illustrates, influence-based players are suitable for boosting rapid visibility, while skill-based players contribute more to long-term brand premium and stable development.

Table 1. Comparison of Influence-Based and Skill-Based Players across Dimensions

Indicator Category	Influence-Based Player Characteristics	Skill-Based Player Characteristics
Social Influence	Large fan base, high interaction frequency	Smaller fan group, but high interaction quality
Brand Performance	Broad brand coverage, volatile conversion rates	High brand concentration, stable conversion rates
Athletic Performance	Less stable performance, relies on heat of topic	Stable performance, consistently excellent technical indicators
Composite Value	Suitable for rapidly enhancing market visibility	Greater potential for long-term brand premium and stable development

5.2 Descriptive Statistics and Distribution

Results show that social influence has the largest standard deviation, indicating the most significant variation among players in this dimension, consistent with the gap between influence-based and skill-based players in reality. In contrast, the distributions of athletic performance and brand performance are relatively concentrated, suggesting most players differ little in these two aspects. The commercial value index, after standardization, exhibits a normal distribution overall, meeting the requirements for subsequent factor analysis and regression analysis. This finding aligns with scholars' observations on the „differentiating role of the social dimension" in professional sports [9,1].

5.3 Factor Structure and Loadings

EFA results reveal a clear three-dimensional structure: the P-dimension main factor consists of „efficiency—stability—honors," the S-dimension main factor comprises „fans—interaction—spillover," and the B-dimension main factor includes „quantity—tier—stability." Cross-loadings are controllable, and convergent and discriminant validity meet threshold requirements. This structure aligns with the three-stage logic of „athletic credibility—social reach—commercial conversion" [5,2,9].

5.4 Group Regression and Weight Difference Analysis

Results indicate that the commercial value of influence-based players primarily relies on social influence, whereas skill-based players' value depends more on athletic performance and brand premium capability. Wald tests confirm that the differences in regression coefficients between the two groups are statistically significant. This suggests that players' value generation mechanisms are not singular but follow different developmental paths. Echoing Pegoraro's proposition on the amplifying effect of social interaction on communication outcomes, influence-based players excel in volume amplification, while research by Cornwell et al. on brand premium effects explains the advantages of skill-based players in long-term value accumulation [11,9].

5.5 Robustness and Alternative Calibrations

First, rerunning regressions after excluding the top and bottom 1% of extreme values yielded results consistent with the baseline model. Second, using alternative indicators, such as replacing points per game with player efficiency rating and brand quantity with collaboration duration, produced conclusions consistent with the original findings. Finally, re-estimation using weighted least squares did not alter the direction or significance levels of variables. These tests demonstrate that the conclusions of this paper possess strong robustness, consistent with exist-

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ing research on the robustness of sports marketing data [7].

5.6 Heterogeneity: Influence-Based vs. Skill-Based

Results show that the commercial value curve of influence-based players exhibits a distinct „pulse-like“ characteristic, often dependent on hotspot events and single-season performances, leading to greater value volatility. In contrast, the value curve of skill-based players is more „gradual-incremental,“ primarily relying on long-term stable athletic performance and alignment with high-end brands for sustained accumulation. Subgroup regression results further validate this: the social influence coefficient for influence-based players is significantly higher than for skill-based players, while the athletic performance and brand performance coefficients for skill-based players are significantly higher than for influence-based players. Wald tests confirm these differences are significant at the 1% level. This conclusion not only corroborates existing research on value differentiation among CBA players [1] but also aligns with analyses on the development path of the domestic league‘s commercialization [3]. Thus, a complementary logic exists between short-term volume and long-term value, necessitating differentiated development and commercial operation strategies for different player types.

5.7 Managerial Insights and Application Suggestions

For agencies, influence-based players require continuous content planning and hotspot operations to enhance social conversion rates, while incorporating a combination of guaranteed and floating terms in contracts to mitigate risks associated with topic volatility. Skill-based players should focus on consolidating athletic performance, strengthening their professional persona, and actively seeking long-term collaborations with high-end brands to highlight their stable premium capability. For brands, influence-based players are more suitable for customer acquisition roles during market expansion phases, while skill-based players provide more reliable credibility endorsement and long-term value support during brand upgrading phases. For the league and clubs, establishing a unified commercial value evaluation system will enhance market transparency. The league could explore institutional innovations linking commercial points to contract space, while clubs need to facilitate young players‘ transition from potential to value realization through training and resource integration [1][3].

5.8 Regression Analysis Results

Results indicate that social influence has the strongest explanatory power for commercial value, passing the test at the 1% significance level with a standardized regression coefficient of 0.412. The regression coefficient for brand performance is 0.368, also significant at the 1% level, indicating its nonnegligible role in value generation. The regression coefficient for athletic performance is 0.275, relatively weaker but still significant at the 5% level. The overall model fit is good, with an adjusted R^2 of 0.601, demonstrating that the P-S-B model effectively explains differences in CBA players‘ commercial value. This aligns with existing research emphasizing the importance of social influence and brand endorsements in value generation [2,6,7].

6. Conclusion

This study developed the P-S-B framework integrating performance, social influence, and sponsorship outcomes into a single evaluative model of athlete market value. Empirical testing confirmed the validity and robustness of this model, while comparative analysis highlighted distinct pathways between influence-oriented and skill-oriented players.

Theoretically, the framework extends brand equity and sports marketing theories by incorporating digital and sponsorship dimensions, offering a more holistic approach to athlete valuation. Practically, it provides tools for agencies to optimize contract management, for brands to select endorsers more effectively, and for the league to refine governance and revenue-sharing mechanisms.

The results suggest that commercialization in sports is not linear: influence-oriented players drive rapid exposure growth, while skill-oriented players sustain long-term premium accumulation. Adopting a dual-track strategy can maximize market returns and balance short-term visibility with long-term stability.

Future research may expand this framework to other leagues or sports, and incorporate additional variables such as fan demographics, cross-border endorsements, or e-commerce performance. This would further enrich understanding of athlete market value in the digital economy.

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