Structural relationships between service quality, communication, motivation, and athlete satisfaction in basketball

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ABSTRACT

Background: Many basketball clubs aim to enhance athlete satisfaction through service quality, communication, and motivation; however, empirical evidence validating these factors as measurable constructs remains limited.

Objectives: This study examines whether these variables function as latent constructs influencing athlete satisfaction and validates their measurement structure using confirmatory factor analysis.

Methods: This study used a quantitative survey and included 263 basketball athletes from various clubs in Sidoarjo, comprising 110 males and 153 females. The participant characteristics focused on players still in the developmental stage who had been actively participating in club training programs for 3 to 6 months, with educational levels ranging from junior high school to college. Participants were selected using purposive sampling. Data were collected using a valid and reliable Likert-scale questionnaire and analyzed using Structural Equation Modeling (SEM) via AMOS 22.

Results: The results demonstrate that service quality (β=0.337, *P*=0.000) and communication (β=0.439, *P*=0.000) significantly enhance motivation. Furthermore, motivation significantly affects athlete satisfaction (β = 0.582, *P* = 0.000). Crucially, the analysis confirms that motivation mediates the relationship between service quality (indirect effect=0.139) and communication (indirect effect=0.240) on satisfaction.

Conclusions: Theoretically, this study confirms motivation as a vital psychological mediator linking managerial inputs to athlete satisfaction. In practice, the findings demonstrate that while high-quality physical facilities provide a necessary structural foundation, they must be integrated with effective, supportive coaching communication to optimally ignite athletes' intrinsic drive and maximize their overall club experience.

Keywords: athlete satisfaction, organizational communication, motivation, service quality, structural equation modeling.

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INTRODUCTION

In the contemporary and hyper-competitive ecosystem of sports management, athlete satisfaction has evolved from a peripheral psychological metric into a fundamental strategic imperative for organizational sustainability. Athlete satisfaction is conceptually defined as a positive affective state resulting from a complex cognitive appraisal of the structures, processes, and outcomes associated with the athletic experience (Zhao et al., 2024). In the context of basketball clubs, where team cohesion and roster stability are critical for tactical execution, satisfaction is a robust predictor of athlete loyalty, performance consistency, and long-term engagement. The urgency of addressing this phenomenon stems from recent empirical evidence demonstrating that dissatisfied athletes are significantly more prone to withdrawal behaviors, burnout, and transferring to competing organizations. Such attrition destabilizes team dynamics and erodes a club's competitive advantage in an increasingly fluid athlete labor market (Choi et al., 2020; Filho et al., 2014; Sousa et al., 2024). Consequently, identifying the multidimensional antecedents that foster a high-performance and highly satisfying environment is a critical necessity for club administrators.

Previous research has established that the organizational capacity to satisfy athletes is heavily reliant on both structural and interpersonal factors. From a structural perspective, service quality—encompassing tangible assets such as training facilities and intangible elements such as administrative reliability—acts as the foundational infrastructure. Studies indicate that perceived service quality directly influences an athlete's sense of value, acting as a primary driver for retention, where its deficiency cannot be mitigated by on-court success alone (Alguacil et al., 2019; Martínez-Rico et al., 2023; Ko & Pastore, 2005; Lee, 2017; Parasuraman et al., 1990). Complementing this structural dimension is the interpersonal architecture of organizational communication. Scholars emphasize that effective communication, characterized by transparent feedback and bidirectional dialogue, fosters a climate of psychological safety and reduces role ambiguity (Carpentier & Mageau, 2013; Jowett, 2017; Sullivan & Sullivan, 1993). Furthermore, grounded in Self-Determination Theory (SDT), recent literature suggests that motivation serves as the internal psychological mechanism translating these external inputs into satisfaction. High-quality services and supportive communication fulfill basic psychological needs, igniting the intrinsic drive necessary for optimal satisfaction (Abdhi et al., 2024; Ryan & Deci, 2000; Vallerand, 2021).

Despite extensive literature on athlete satisfaction, a significant research gap persists regarding the structural interplay among service quality, communication, and motivation within a unified measurement framework. Previous studies have predominantly examined these variables in isolation or through direct relationships without validating their concurrent interaction as latent constructs within a comprehensive model (Susila et al., 2026; Günel & Duyan, 2020; Ain et al., 2024). Furthermore, although recent research has emphasized the importance of psychological mechanisms in sport settings, empirical validation of how these constructs operate simultaneously through confirmatory factor analysis remains limited (Abdhi et al., 2024; Melesse et al., 2024). Therefore, the limitation persists that concurrent validity between the measurement instruments and related constructs has not been sufficiently established, highlighting the need for further investigation

to ensure the robustness of the proposed model. The novelty of this current study lies in its focus on the developmental context of age-group basketball at the club level within an emerging sports market.

Furthermore, previous literature has rarely employed a comprehensive structural equation modeling (SEM) approach to test these variables simultaneously. The psychological process—how structural service inputs and interpersonal communication become satisfaction outputs through the mediation of motivation—often remains an unexplained "black box." This limitation hinders club managers' ability to design holistic, evidence-based interventions.

Addressing this specific gap, the primary objective of this article is to empirically evaluate the direct and indirect effects of service quality and communication on athlete satisfaction, with motivation acting as a mediating variable. Using a cross-sectional design and structural equation modeling (SEM), this research seeks to develop and validate a comprehensive model linking managerial practices to psychological outcomes among club-level basketball athletes.

The findings of this study are expected to offer twofold contributions. Theoretically, this research contributes to the domains of sport management and sport psychology by validating the mediating role of motivation within SDT, offering a more nuanced understanding of the satisfaction mechanism beyond direct linear effects in a non-elite club context. Practically, the study provides actionable insights for sports administrators and club managers. It emphasizes that financial investment in physical infrastructure (service quality) and the establishment of communication protocols must be strategically aligned to foster athlete motivation. Ultimately, this research provides a blueprint for maximizing talent retention and athlete satisfaction in competitive, developmental club settings.

METHODS

Study Design and Participants

This research employed a quantitative, cross-sectional survey design with a causal-comparative approach. The primary objective of this design was to empirically examine the structural relationships between exogenous variables (service quality and organizational communication) and the endogenous variable (athlete satisfaction), with motivation serving as a psychological mediator. This observational design allows assessment of these complex dynamics at a specific point in time without manipulating the research environment, thereby providing an accurate and ecologically valid representation of athletes' real-world experiences within their respective clubs.

The target population for this study consisted of competitive male and female basketball athletes affiliated with officially registered basketball clubs in Sidoarjo Regency, East Java, Indonesia, as shown in Table 1. The study used a nonprobability purposive sampling technique to select participants. The inclusion criteria required participants to be active, registered members of their respective clubs who routinely participated in structured training programs.

Ethical approval statement

All research procedures and data collection methods reported in this manuscript were conducted in accordance with the ethical standards of the institutional research

ethics committee (reference number: 0203/UN34.16/Val/2024) and complied with the principles outlined in the Declaration of Helsinki. The supervisor and representatives from Yogyakarta State University approved the study.

Prior to participation, written informed consent was obtained from the parents or legal guardians of all participants. In addition, assent was obtained from the athletes themselves after they were provided with a clear explanation of the research objectives, procedures, potential risks, and benefits. Participation was entirely voluntary, and all participants were assured of the confidentiality and anonymity of their data.

Research Instruments

Data were collected using a structured, self-administered questionnaire with a 5-point Likert scale ranging from 1 (Very Poor) to 5 (Very Good). The instrument was adapted from the established literature to ensure robust psychometric properties and was tested for validity and reliability before distribution. The questionnaire consisted of four main sections measuring latent variables:

1. Service Quality with validity Aiken V score 0,952: 16 questions, including those measured using an adaptation of the Scale of Service Quality in Recreational Sports (SSQRS), evaluating tangible facilities, responsiveness, and reliability (Ko & Pastore, 2005).
2. Communication with validity Aiken V score 0,857: 23 questions, including those assessed using items focused on clarity, transparency, and bidirectional feedback within sports teams (Cranmer et al., 2020).
3. Motivation with validity Aiken V score 0,952: 16 questions adapted from the Sport Motivation Scale (SMS-II) based on Self-Determination Theory, measuring intrinsic and extrinsic drivers (Pelletier et al., 2013; Ryan & Deci, 2000).
4. Athlete Satisfaction with validity Aiken V Score 0,952: 12 questions, including evaluation using fundamental dimensions from the Athlete Satisfaction Questionnaire (ASQ) adapted for club settings (Chelladurai et al., 1997; Riemer & Chelladurai, 2013).

Procedures

This study was conducted with the primary objective of "investigating whether service quality, communication, and motivation serve as latent constructs that influence athlete satisfaction in a basketball club. This study also aims to confirm the measurement model of these constructs using confirmatory factor analysis to test whether the observed indicators validly represent each latent variable and effectively explain athlete satisfaction." The study's operational stages began with subject identification and selection, yielding a sample of 263 basketball athletes (N = 263), comprising both male and female athletes. The specific inclusion criteria targeted players at the developmental or novice stage who were affiliated with and actively participating in a club training program for at least 3 to 6 months in the Sidoarjo Regency area. After obtaining informed consent, the next step was field data collection using the "Basketball Player Form at the Sidoarjo Club" questionnaire to measure "Service Quality, Communication, Motivation, and Athlete Satisfaction." All quantitative data successfully collected were then tabulated and analyzed using "SEM PLS AMOS" statistical analysis. In the final stage, the findings from this

statistical analysis were thoroughly interpreted to evaluate the proposed hypotheses, formulate research conclusions, and develop recommendations for basketball coaches and club administrators.

Data Analysis

Prior to the primary data collection, the instrument underwent a rigorous content validity process. It was systematically reviewed by a panel of three expert validators—comprising academicians in sport psychology and seasoned practitioners in sport management. Content validity was established using Aiken's V formula, with all items yielding coefficients > 0.50, indicating high content relevance and clarity.

Construct validity and reliability were further confirmed empirically through Confirmatory Factor Analysis (CFA). The results demonstrated that all standardized factor loadings ranged from 0.71 to 0.89. Convergent validity was established as the Average Variance Extracted (AVE) values for all constructs—Service Quality (0.62), Communication (0.65), Motivation (0.59), and Athlete Satisfaction (0.68)—exceeded the recommended 0.50 cut-off. Internal consistency and construct reliability were robustly confirmed, with Cronbach's Alpha coefficients exceeding 0.70 and Composite Reliability (CR) values ranging from 0.88 to 0.92, indicating the instrument's suitability for structural modeling.

RESULTS

Participants were developmental-stage players who had actively participated in club training programs for 3 to 6 months and had education levels ranging from junior high school to university, and were selected for the final sample. This sample size robustly meets the statistical power and maximum likelihood estimation thresholds for Structural Equation Modeling (SEM) analysis.

Table 1. Distribution of Participants Based on Educational Level

Educational Level	Frequency	Percent	Valid Percent	Cumulative Percent
Junir High School	111	42.2	42.2	42.2
Senior High School	132	50.2	50.2	92.4
University	20	7.6	7.6	100.0
Total	**263**	**100.0**	**100.0**	

The comparison of the two factors confirms that although both are individually strongly correlated, the combination of effective organizational communication and high service quality is the primary key to maximizing the motivation and satisfaction of basketball athletes, as they complement each other to create a fun and productive coaching process. All questionnaire items used to measure communication, service quality, motivation, and athlete satisfaction demonstrated satisfactory construct validity. The standardized factor loadings and Average Variance Extracted (AVE) for all four instruments exceeded the critical value of 0.50 ($N = 263$, $\alpha = 0.05$), indicating that each item was significantly correlated with its respective latent construct. Thus, all items were considered valid and suitable for further analysis.

The normality test using the critical ratio (c.r.) for skewness and kurtosis, as described in Table 2, was conducted to assess data distribution symmetry. Based on the results, the skewness values for all measurement items fell within the acceptable range of ±2.58, indicating that the variables were normally distributed. Given the

variables' normality, subsequent analysis employed Maximum Likelihood Estimation (MLE) within SEM to examine relationships among the variables.

Table 2. Summary of Univariate and Multivariate Normality

Variables / Constructs	No. of Items	Skewness Range	Kurtosis c.r. Range	Description
Athlete Satisfaction	12	-0.024 to 0.965	-2.809 to 5.524	Univariate non-normal
Motivation	16	-0.007 to 0.629	-0.930 to 1.423	Univariate normal
Communication	23	-0.123 to 0.564	-2.421 to -0.981	Univariate normal
Service Quality	16	-0.007 to 0.615	-2.195 to -0.978	Univariate normal
Multivariate Kurtosis		Value = 25.361	c.r. = 2.139	Multivariate normal

Following the normality assessment, the overall structural model was evaluated for Goodness-of-Fit (GoF) to assess how well the hypothesized model fits the empirical data (Table 3). Although the Chi-Square statistic (χ^2 = 3404.056, ρ = 0.000) indicated a marginal/non-fit—a common statistical occurrence in SEM when processing large sample sizes (N=263)—other critical and less sample-sensitive indices demonstrated an excellent model fit. Specifically, the Root Mean Square Error of Approximation (RMSEA) was highly satisfactory at 0.048 (≤ 0.08), and the CMIN/DF ratio was 1.604 (≤ 2.0). Incremental fit indices further supported the model, with both the Tucker-Lewis Index (TLI = 0.915) and the Comparative Fit Index (CFI = 0.918) exceeding the rigorous 0.90 threshold. These results collectively confirm that the empirical data adequately fit the proposed theoretical framework, allowing the study to proceed with hypothesis testing.

Table 3. Goodness-of-Fit Indices for the Structural Model

Fit Index	Cut-off value	Model Value	Evaluation
Chi-Square	< 2230,280 (df=2122)	3404,056	Not Fit
Significant Probability	≥ 0.05	0.000	Not Fit
RMSEA	≤ 0.08	0,048	Fit
GFI	≥ 0.90	0,731	Marginal Fit
AGFI	≥ 0.90	0,711	Marginal Fit
CMIN/DF	≤ 2.0	1,604	Fit
TLI	≥ 0.90	0,915	Fit
CFI	≥ 0.90	0,918	Fit

The structural path analysis in Table 4 reveals the profound impact of club management practices on athlete psychology. The management and coaches at Sidoarjo basketball clubs demonstrate a supportive approach by providing high-quality training facilities, structured schedules, and reliable logistical support (Service Quality). This tangible provision directly and positively increases athletes' internal drive to train, as evidenced by a significant path coefficient (β = 0.337, ρ = 0.000). Equally important is the interpersonal dynamic within the club; when coaches deliver clear instructions, transparent feedback, and open dialogue (Communication), this collective effort creates a highly effective and enjoyable training atmosphere. This positive interpersonal relationship strongly elevates athlete motivation (β = 0.439, ρ = 0.000). When comparing the two, communication exerts a slightly stronger direct influence on motivation than physical service quality, highlighting the crucial "human element" in basketball coaching.

Beyond sparking motivation, both organizational factors also directly contribute to the athletes' overall contentment. Service quality shows a significant direct effect

on athlete satisfaction (β = 0.170, ρ = 0.023), as does communication (β = 0.165, ρ = 0.040). However, the data unequivocally show that the most substantial direct driver of athlete satisfaction is their own internal motivation (β = 0.582, ρ = 0.000). This implies that when athletes are intrinsically driven, find joy in their skill development, and feel actively engaged in the process, their overall satisfaction with the club experience reaches its peak.

Table 4. Coeficient Structural Path

Structural Path	Path Coeficient (*β*)	P-Value	Result
Service Quality → Motivation	0,33		
Communication → Motivation	0,43		
Motivation → Satisfaction	0,58	< 0,05	Supported
Service Quality → Satisfaction	0,18		
Communication → Satisfaction	0,22		

Table 5. Coeficient Structural Path

Structural Path	Direct Effect	Indirect Effect	Description
Communication → Motivation	0.555	-	
Service Quality → Motivation	0.298	-	Positive Direct Effect
Motivation → Athlete Satisfaction	0.486	-	
Communication →Athlete Satisfaction	0.240	0.269	Direct and Mediated
Service Quality → Athlete Satisfaction	0.139	0.145	Effect

The integration of these pathways underscores the critical mediating role of motivation (Table 5). Although service quality and communication directly affect satisfaction, their overall impact is significantly amplified when channeled through the athletes' psychological drive. The mediation analysis confirms that service quality indirectly influences satisfaction with a significant effect size of 0.139 (ρ = 0.002). Similarly, the coach's communication style indirectly influences athlete satisfaction through motivation with an effect size of 0.240 (ρ = 0.002$).

Overall, these findings underscore that external physical resources and interpersonal dialogue complement each other perfectly to create a fun and productive coaching process. While high-quality facilities create a comfortable environment, it is the combination of these facilities with an effective coaching communication style that truly ignites the athletes' intrinsic motivation. Therefore, to maximize athlete satisfaction and retention, it is important to focus not only on tangible services but also to integrate them with a supportive communication approach strategically.

DISCUSSION

The current study sought to untangle the complex structural pathways connecting organizational management practices—specifically service quality and communication—to athlete satisfaction, utilizing motivation as a psychological mediator. Structural equation modeling (SEM) confirmed the hypothesized conceptual framework, demonstrating that athlete satisfaction is not merely a passive outcome of receiving good service but an active psychological state driven by motivation. These findings firmly align with the fundamental tenets of Self-Determination Theory (SDT) (Van Yperen, 2025), illustrating that when basketball clubs provide a supportive environment through quality infrastructure and clear

dialogue, they successfully satisfy the athletes' basic psychological needs, thereby igniting their intrinsic drive (Alkasasbeh & Akroush, 2025).

A critical and novel aspect of this study is the comparative evaluation between interpersonal communication and physical service quality in fostering athlete motivation (Jowett et al., 2023). While previous sport management literature heavily emphasizes tangible facility investments as the primary driver of club loyalty (Wekesser et al., 2021), the data from this study reveal that effective organizational communication exerts a slightly stronger influence on athletes' psychological drive. This finding strongly supports Jowett's (2017) assertion that the "human element"—particularly the quality of coach-athlete and management-athlete relationships—is the primary engine of sports development. The results argue that while state-of-the-art basketball courts and training gear (service quality) act as a baseline structural expectation, it is the quality of human interaction, characterized by transparent feedback and clear instruction, that truly converts these physical assets into psychological enthusiasm (Cranmer et al., 2020).

Furthermore, the mediation analysis contributes a significant theoretical advancement by unpacking the often-overlooked "black box" between managerial inputs and athlete satisfaction (Liu et al., 2024). Unlike traditional service-profit chain models in commercial settings that assume a direct linear effect of service on satisfaction, our findings demonstrate that motivation acts as an indispensable psychological bridge (Jin et al., 2022; Nugroho et al., 2025). The findings indicate that without the activation of an athlete's intrinsic motivation, the impact of well-maintained facilities and good coaching communication on global satisfaction is substantially diminished. This echoes recent scholarly arguments stating that developmental athletes prioritize environments that facilitate their passion and personal growth over mere physical comfort (Braz et al., 2025).

The practical implications of these findings are highly relevant for basketball club managers, coaches, and sporting policymakers. To maximize talent retention and overall satisfaction, clubs must shift from a purely facility-centric development paradigm to a holistic organizational model. Investment in physical infrastructure must be coupled with rigorous training in interpersonal skills for coaches and administrators. Coaches should be equipped not only with tactical basketball knowledge but also with pedagogical communication strategies that deliver constructive, transparent, and motivating feedback (Griban et al., 2022; Zakaria & Nurrachmad, 2025). Theoretically, this study reinforces the need to integrate organizational behavior models with sport psychology frameworks to comprehend and optimize the modern athlete's experience fully.

Limitations of the study

Despite these robust findings, several limitations in the research must be acknowledged. First, the cross-sectional nature of the data collection restricts the ability to establish absolute, long-term causal inferences over an entire competitive season. Second, due to geographical constraints during data collection, a portion of the questionnaires was administered digitally via Google Forms. This method encountered technical limitations, specifically unstable internet networks in certain training areas, which caused delays and potential survey fatigue among some participants, inadvertently affecting their focus while responding. Finally, the purposive sampling focused exclusively on developmental athletes within a specific

regional context (Sidoarjo), limiting the generalizability of the results to elite professional leagues.

CONCLUSION

This study concludes that both service quality and communication are critical antecedents of athlete satisfaction in developmental basketball clubs, with motivation functioning as an indispensable psychological mediator. The findings demonstrate that while high-quality physical facilities provide a necessary structural foundation, they must be integrated with effective, transparent, and supportive coaching communication to optimally ignite an athlete's intrinsic drive and maximize overall satisfaction. To address the limitations of the current cross-sectional approach and methodological constraints, it is recommended that future research employ longitudinal or experimental designs to track motivational fluctuations across different phases of a competitive season. Furthermore, integrating qualitative approaches, such as in-depth interviews or focus group discussions, is highly suggested to provide a deeper, more contextualized understanding of exactly which communication styles most effectively alter an athlete's psychological state.

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AI DISCLOSURE STATEMENT

During the preparation of this manuscript, the authors used DeepL Translate in combination with Google Translate and Grammarly to support translation, grammar checking, and language refinement. All generated outputs were carefully reviewed and edited by the authors to ensure accuracy, clarity, and adherence to academic standards. The authors take full responsibility for the content of this manuscript.

DATA AVAILABILITY

The empirical data supporting the findings of this study are contained within the manuscript and its supplementary materials. Additional detailed datasets or raw data used for the structural equation modeling are available from the corresponding author upon reasonable academic request.

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CONFLICT OF INTEREST

The authors hereby declares that this research is free from conflicts of interest with any party.

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