

Empirical Analysis on the Influence of Individual Characteristics and Consumption Motivation on Sports Consumption Satisfaction

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Abstract— As sports consumption in China surpasses 2 trillion yuan by 2021, understanding the varied impacts of consumer characteristics and motivations on satisfaction becomes crucial for industry growth. This study examines how factors like age, occupation, education, and specific motivations influence sports consumption satisfaction among Chinese residents. Utilizing surveys, statistical analyses, and regression methods, it identifies significant influences: occupation and education positively correlate with satisfaction, while increased exercise time inversely affects it. Notably, satisfaction levels rise with better personal physical condition. However, gender, age, and monthly spending show no significant effect. Motivational factors, including social interaction, fitness goals, discipline, learning, health, mental well-being, and competitiveness, are positively linked to satisfaction, suggesting targeted strategies to enhance consumer motivation and satisfaction. This research highlights the need for personalized marketing and the importance of supply-side reforms in the sports industry to meet diverse consumer demands and bolster the market.

Keywords— Individual characteristics; Consumption motivation; Sports consumption satisfaction; Factor analysis; Optimal scale regression.

I. INTRODUCTION

New industries are emerging, and the sports industry has become a remarkable new economic growth point. Especially with the rise of the leisure pursuits, urban residents increasingly focus on a healthy lifestyle (Ouyang and Yang 2009). The gross output value of the sports industry has been increasing its share in economic growth, becoming an essential factor in the long-term stable economic growth in the new normal period (Z. Yang and Lin 2022). So, vigorously tapping the potential of residents' sports consumption is of great theoretical and practical significance for promoting the development of the sports industry, improving people's living standards, and stimulating economic growth (H. Gao et al. 2022). In 2019, the General Office of the State Council issued the Opinions on Promoting National Fitness and Sports Consumption and Promoting the High-Quality Development of the Sports Industry, pointing out that the sports industry plays an irreplaceable role in meeting the growing needs of the people for a better life.

However, with the arrival of the COVID-19, the sports industry has been significantly impacted, with the size of the industry plummeting and user demand for sporting goods fluctuating dramatically (Zhou and Feng 2023). People realize that in unexpected situations, studying how to stabilize consumer demand for sports products becomes a realistic and valuable task. Understanding the well-being and satisfaction of sports consumers is essential to increase the consumption of sports consumers (Jeeyoon Kim, Kim, and Kim 2017). Because it allows managers to develop precise strategies and actions to improve these experiences and increase the level of commitment to the service, thereby strengthening customer loyalty over time (Fernando, David, and Sergio 2023). Brand loyalty is one of the main objectives of marketing because of the impact it has on the sustainability of an organization. However, due to the way of the sports industry is organized, the

explanation of how this type of loyalty is built up in the sports industry is complex (Spindler, Schunk, and Könecke 2023; Dhandra 2019). Until now, combining the different characteristics of sports programs into compelling products and services that meet consumer expectations has remained very challenging (Vassiliadis, Mombeuil, and Fotiadis 2021). However, few studies have investigated the factors influencing consumer satisfaction with the consumption of tourism products, and even fewer have linked it to consumer expectations (Bleakley et al. 2022). Researchers of sports consumption behavior have gained insights into how and why people consume sports and the consequences of that consumption. However, few have reflected on the population used to study consumers and develop theories (Delia et al. 2022). This study concludes that studying the influence of individual characteristics and consumer motivation on sports consumption satisfaction is of positive significance for improving the level of sports consumption and the high-quality development of the sports industry, implementing the strategy of expanding domestic demand, and forming a new pattern of development that is dominated by the domestic macrocycle and promoted by the domestic and international dual cycles.

This paper takes Chinese residents as the survey object and adopts a questionnaire survey, descriptive statistical analysis, factor analysis, optimal scale regression to study the influence of individual characteristics and consumption motivation on sports consumption satisfaction. The main significance of this study lies in 1. Revealing the influence of individual characteristics on sports consumption satisfaction. 2. Exploring the influence of sports consumption motivation on sports consumption satisfaction. 3. Proposing countermeasures to improve sports consumption satisfaction.

II. LITERATURE REVIEW

With the improvement of people's material conditions and changes in values, the daily consumption structure of the population tends to be oriented towards developmental and enjoyment needs (Ying 2012). Sports consumption has shifted from hedonistic consumption that seeks pleasurable experiences to meaningful consumption that seeks self-growth and value in life. (Guo et al. 2023). Sports are no longer just physical and mental activities but include leisure and recreational activities (Liao, Widowati, and Yang 2021). Moreover, the rise and development of sports consumption is the inevitable result of economic prosperity and social progress. Scholars have studied the relationship between individual characteristics, consumer motivation and sport consumption satisfaction from different angles.

Scholars have used qualitative and quantitative methods to explore the individual characteristics of sport consumption, motivation, and satisfaction. Jihye (et al. 2020) and Liu (et al. 2022) introduce the stimulus-organism-response (SOR) theory and structural equation modeling (SEM) to construct a theoretical model of sports consumption characteristics and future consumption intention. Niu (2017) uses the questionnaire survey method, mathematical statistics and entropy measure, the quantitative relationship between the individual characteristics of urban residents and their motivation to consume sports was investigated. Funk, Beaton, and Alexandris (2012) design a multi-attribute survey instrument to measure five motivational sub types and tested for reliability and validity with a sample of sports consumers. By creating and approving a scale to quantify compulsive sports consumption (CSC), Aiken et al. (2018) expanded the field of research on obsessive consuming. Sultan (et al. 2020) use a quantitative research approach to examine the moderating effects of perceived communication, satisfaction, and trust on the intention-behavior gap and the perceived behavioral control (PBC)-behavior gap in the Theory of Planned Behavior (TPB) model. Chen (et al. 2023) constructs a relationship model between college students' exercise efficacy and behavioral intention based on the Health Action Process Approach (HAPA) model and customer satisfaction theory.

The results of scholars' studies show that sports consumption expenditure is determined by gender (Lyu, Baek, and Kim 2023), educational attainment (Zhao et al. 2012), income (Pawlowski et al. 2021; Huang et al. 2017), environmental factors, and occupational (Trail et al. 2001). Grohmann, Battistella, and Radons (2013) argues that idol-endorsed sports products have a relationship with word-of-mouth among sports consumers and that women's contribution is more prominent than men's in the return of idol-endorsed products. Female sports consumers are more emotional, diversified, personalized, and casual in sports consumption (Q. Gao and Xia 2020). Women are more likely to seek gratification (i.e., personal, social, and tension-release gratification) from social networking sites (SNS) and impact consumer behavior. (Ahiabor et al. 2023). Conversely, advertising changes users' willingness to consume sports (Bian 2022; Bleakley et al. 2022). In this sense, marketing professionals should focus on the relationship between sports consumers and their social

groups based on actual and ideal self-concepts, such as lifestyle (Guzmán Rincón et al. 2023). Thibaut (et al. 2017) examine the impact of households with different socio-demographic and economic characteristics on people's leisure expenditures. Thibaut (et al. 2020) argues that families with higher income levels, parents who played sports regularly in their youth, higher education, two-parent families, and many sports club members typically spend more on sports participation.

Regarding individual consumer psychology, sports consumption involves complex psychological processes - promoting emotional ups and downs that reinforce and perpetuate habitual behaviors (Ying 2012). Experiential purchases (e.g., travel or outdoor recreation) hold more promise for lasting consumer happiness than material consumption in a consumerist society. Satisfaction from experiences spans a reasonably broad time course, including anticipation of experiential consumption, consumption in the moment, and retrospectives (Kumar 2022). The more appealing spectator sport consumption is to the consumer and the more relevant it is to the consumer's self-expression, the more loyal the consumer will be to spectator sport consumption (Xun et al. 2020). For example, viewers' perceived value of a live sports platform directly affects viewer loyalty, and the quality of the live platform's features, ease of use, and quality of service can also impact viewer loyalty (Zou et al. 2023). All types of exercise and sports are associated with reducing the burden on mental health (Lange, Nakamura, and Reissmann 2023). Psychological endogenous and exogenous ambient motivation can positively contribute to participants' positive emotions in participatory tourism, and positive emotions contribute to participants' place attachment, generating willingness to disseminate and revisit (Pan and Li 2020). Players felt moderately lonely during the epidemic, with first-person shooters (FPS), fighting games, and sports games playing a role in overcoming loneliness. In addition, competitive players spend more time on all types of games. The study found that because competitive and casual players have different motivations, casual players are more satisfied and more likely to return to gaming in the future than competitive players (J. Yang et al. 2023).

Regarding sports consumption motivation, sports consumption motivation has been defined as representing autonomy and control orientations that motivate the desire to engage in goal-directed sports behaviors for positive benefits (Funk, Beaton, and Alexandris 2012). Still, most studies on sports fans do not analyze behavior from a theoretical motivation perspective (Funk, Beaton, and Alexandris 2012). When examining purchasing behavior based on willingness to participate in sport, groups with personal differentiation and individualized willingness to participate in sport were negatively associated with the substantive values of the product, such as quality, functionality (Funk, Beaton, and Alexandris 2012), scarcity, and design, and positively associated with the extrinsic values of the product, such as trademarks, fashion, and advertising (Hwang 2011). Scholars have produced much research on personal characteristics, consumer motivation, and sports consumption satisfaction. However, few have reflected on the contexts or populations used to study consumer and

developmental theories (Delia et al. 2022), and the impact of individual characteristics and consumer motivations on sport consumption satisfaction.

Based on the existing research results, this paper first uses factor analysis to identify sport consumption motives further. Then, it combines individual consumer characteristics, mainly introducing variables such as satisfaction with current physical condition and frequency of exercise, to comprehensively study the key factors affecting residents' sports consumption satisfaction. Countermeasures to improve residents' sports consumption satisfaction and promote residents' sports consumption are proposed. Residents' sports consumption satisfaction is affected by a variety of factors. This paper will take the research data of these variables as the basis to verify the hypotheses and identify the main influencing factors. The theoretical framework is shown in Figure 1.

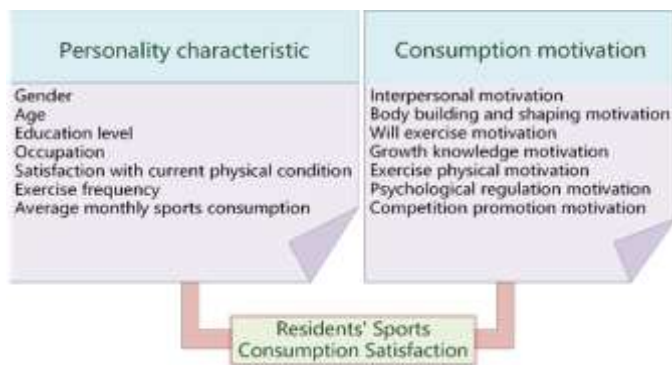


Figure 1. The theoretical framework

III. METHODS, VARIABLES, AND DATA

3.1. Methods

3.1.1 Factor Analysis

Factor analysis is to study the internal correlation of the correlation matrix of multiple indicators, using a few common factors to replace the original variables, each index variable represents a linear combination of common factors, and to name the comprehensive index according to the expertise and the unique meaning reflected by the included indicators. The purpose of factor analysis is to seek the basic structure of variables, simplify the observation system, reduce the number of variable dimensions, and explain the whole problem with a few variables. It belongs to a statistical method to deal with dimension reduction in multivariate analysis. Its core idea is to apply multivariate statistics to objectively assign the weights of relevant indicators.

Suppose With p original variables $x_1, x_2, x_3, \dots, x_p$, the original variables may be correlated or independent of each other. There are n unobservable factors $F_1, F_2, F_3, \dots, F_n (p > n)$, the following factor analysis model can be developed:

$$x_1 = a_{11}F_1 + a_{12}F_2 + \dots + a_{1n}F_n + \varepsilon_1$$

$$x_2 = a_{21}F_1 + a_{22}F_2 + \dots + a_{2n}F_n + \varepsilon_2$$

.....

$$x_p = a_{p1}F_1 + a_{p2}F_2 + \dots + a_{pn}F_n + \varepsilon_p$$

The above equation is expressed in the form of the

following matrix:

$$X = AF + \varepsilon \quad (1)$$

In equation (1), $F = (F_1, F_2, \dots, F_n)$ called the common factor; $A = (a_{pn})$ is factor loading matrix; a_{pn} is factor loading, represents the correlation coefficient between the p variable and the n factor, the higher the value of the coefficient, the higher the correlation, and vice versa, the lower the correlation; ε stands for random variable.

3.1.2 Optimal Scale Regression

Optimal scaling regression is specifically used to solve the problem of how to quantify categorical variables in modeling. The questionnaire data are mostly categorical data, and the optimal scale regression can be used directly. Its basic idea is to analyze the change in the strength of the influence of each level on the dependent variables, using certain nonlinear transformation method for repeated iteration on the premise that the association between the transformed variables is linear, to find the best quantitative score for each category of the original classification variable, then use quantitative score in the corresponding model instead of the original variables for subsequent analysis. Applying the optimal scale transformation technique to linear regression is the optimal scale regression, which is implemented by using Categorical Regression in the SPSS.

3.1.3 Variables

Sports consumption has the intrinsic essential characteristics, but also has the external popularity, spiritual and recreational characteristics. Based on the questionnaire survey, this paper considers both the demographic characteristics of consumer behavior subjects and the subjective attitude of consumption motivation when selecting variables, which further expands the research scope and vision of residents' sports consumption.

3.1.3.1 Description of the Explained Variable

Residents' sports consumption satisfaction is the degree of satisfaction after consumers' sports activities and related consumption. Based on this, this paper takes the categorical variable of residents' sports consumption satisfaction as the explained variable.

3.1.3.2 Description of the Explanatory Variable

For the personality characteristics of sports consumers, gender, age, education level, occupation, satisfaction with current physical condition, exercise frequency and average monthly sports consumption were selected for the study. Different personality characteristics have greater variability in the choice of sports products and may also have differentiated effects on post-consumption satisfaction.

For the sports consumption motivation, based on the Likert scale, the scale was initially designed in terms of socialization, physical exercise, psychological adjustment, bodybuilding, knowledge acquisition, competitive improvement, and then used factor analysis to obtain all kinds of consumption motivation of sports consumers, and included in the explanatory variables for analysis. Different consumption motivation may have different effects on satisfaction.

The raw data was processed using the statistical analysis software SPSS26.0. The factor model was constructed, and

common factors were extracted and analyzed using principal component analysis. The KMO value is 0.890, and the Bartlett's spherical test is also passed, and the data are suitable for factor analysis. The cumulative contribution rate of the 7 principal factor eigenvalues reached 86.35%, indicating that the 7 principal factors basically included the total information of 16 scale items. The Cronbach's alpha coefficient is 0.915, which passes the reliability test on the whole.

To some extent, the eigenvalue can be seen as an indicator of the magnitude of the influence of the factor, and can usually

be used as inclusion criterion for selecting factors with an eigenvalue greater than 1. Adopting this standard, it can be seen from Table 1 that the cumulative contribution rate of the eigenvalues of the seven principal factors reached 86.35%, indicating that the seven principal factors basically included the total information of the 16 scale items. Varimax orthogonal rotation method was used to maximize the variance differences among the factors, and the eigenvalues and contribution rates of the principal factors after rotation are shown in Table 1.

TABLE 1. Factor load array, eigenvalue, contribution rate, cumulative contribution rate after rotation

	Factor						
	F ₁ : inter- personal motivation	F ₂ : body building and shaping motivation	F ₃ : will exercise motivation	F ₄ : growth knowledge motivation	F ₅ : exercise physical motivation	F ₆ : psychological regulation motivation	F ₇ : competition promotion motivation
Q ₁ : I make sports consumption to meet more people	0.842	0.166	0.217	0.138	0.008	0.165	0.214
Q ₂ :Sports consumption has allowed me to make more friends	0.839	0.118	0.203	0.21	0.029	0.218	0.132
Q ₃ :I make sports consumption to accompany family or friends	0.771	0.188	0.234	0.277	0.071	-0.073	0.132
Q ₄ :I make sports consumption because I want to become more beautiful	0.105	0.918	0.068	0.034	0.154	0.104	0.021
Q ₅ :I make sports consumption because I want to shape more beautiful body lines	0.104	0.918	0.028	0.059	0.176	0.11	0.046
Q ₆ :I make sports consumption to resist aging and keep a better appearance	0.189	0.852	0.075	0.03	0.134	0.23	0.024
Q ₇ : I make sports consumption to exercise my will to better adapt to the society in the future,	0.291	0.048	0.787	0.266	0.146	0.231	0.135
Q ₈ :I make sports consumption to improve self-confidence by improving my skills	0.337	0.104	0.765	0.311	0.026	0.12	0.182
Q ₉ :Making sports consumption lets me deeply understand the relevant sports rules, and find sports more interesting	0.277	0.049	0.376	0.786	0.091	0.161	0.192
Q ₁₀ : I make sports consumption to increase sports knowledge	0.434	0.067	0.274	0.767	0.075	0.099	0.201
Q ₁₁ :I make sports consumption to exercise and improve my health	0.038	0.231	0.094	-0.033	0.911	0.16	-0.061
Q ₁₂ :After doing exercise, I am more focused and the body is stronger than before	0.043	0.295	0.06	0.258	0.717	0.403	0.057
Q ₁₃ :After sports consumption, I feel happy and relaxed	0.044	0.246	0.143	0.076	0.31	0.809	0.173
Q ₁₄ :I make sports consumption to relax and ease the mood	0.295	0.27	0.217	0.153	0.205	0.709	-0.232
Q ₁₅ : I make sports consumption to participate in competitions and get rankings	0.365	0.023	0.215	0.308	-0.088	-0.012	0.761
Q ₁₆ :I make sports consumption to improve my skills	0.447	0.132	0.473	0.145	0.114	0.056	0.545
Eigenvalue	2.954	2.8	1.925	1.731	1.617	1.609	1.180
Contribution rate(%)	18.461	17.499	12.034	10.817	10.109	10.057	7.373
Cumulative contribution rate(%)	18.461	35.960	47.994	58.812	68.920	78.977	86.350

The first main factor has high loadings on Q1, Q2, Q3, and Q1: I make sports consumption to meet more people, Q2: Sports consumption has allowed me to make more friends, Q3: I make sports consumption to accompany family or friends from different sides reflect the interpersonal situation, respectively, so they are called interpersonal motivation factor, Cronbach's alpha was 0.897, which passed the reliability test.

The second main factor has high loadings on Q4, Q5, Q6, and Q4: I make sports consumption because I want to become more beautiful, Q5: I make sports consumption because I want to shape more beautiful body lines, Q6: I make sports consumption to resist aging and keep a better appearance from different aspects reflect the consumers' situation in terms of body appearance when they consume sports, so called bodybuilding and shaping motivation factor, Cronbach's alpha was 0.927, which passed the reliability test.

The third main factor has high loadings on Q7, Q8, while Q7: I make sports consumption to exercise my will to better adapt to the society in the future, Q8: I make sports consumption to improve self-confidence by improving my skills reflect the willpower and adaption to the society from different sides respectively, so they are called will exercise motivation factor, Cronbach's alpha was 0.855, which passed the reliability test.

The fourth main factor has high loadings on Q9, Q10, while Q9: Making sports consumption lets me deeply understand the relevant sports rules, and find sports more

interesting, Q10: I make sports consumption to increase sports knowledge from different aspects reflect the sports knowledge and sports rules, so called growth knowledge motivation factor, Cronbach's alpha was 0.909, which passed the reliability test.

The fifth main factor has high loadings on Q11, Q12, and Q11: I make sports consumption to exercise and improve my health, Q12: After doing exercise, I am more focused and the body is stronger than before respectively from different sides reflect the impact on physical health after sports consumption, so called exercise physical motivation factor, Cronbach's alpha was 0.810, which passed the reliability test.

The sixth main factor has high loadings on Q13 and Q14, while Q13: After sports consumption, I feel happy and relaxed, Q14: I make sports consumption to relax and ease the mood reflect the effect of sports consumption on the mood from different aspects, so they are called psychological regulation motivation factor, Cronbach's alpha was 0.755, which passed the reliability test.

The seventh main factor has high loadings on Q15 and Q16, and Q15: I make sports consumption to participate in competitions and get rankings, Q16: I make sports consumption to improve my skills reflect the influence on skill rankings after sports consumption from different sides, so called competition promotion motivation factor, Cronbach's alpha was 0.747, which passed the reliability test.

The variable framework is shown in Table 2.

TABLE 2. Definition and description of the variable

Variable		Definition
Explained Variable	Residents' sports consumption satisfaction	1= Very dissatisfied, 2 = Dissatisfied, 3= Not very satisfied, 4 = General, 5 = A little satisfied, 6 = Satisfied, 7 = Very satisfied
	Gender	1 = Male, 2 = Female
Explanatory Variable	Age	1 = Under 20 years old, 2 = 20-30 years old, 3 = 31-40 years old, 4 = 41-50 years old, 5 = 51-60 years old, 6 = Over 60 years old
	Education level	1 = Junior high school and below, 2 = High school/ technical secondary school, 3 = Junior college, 4 = Bachelor degree, 5 = Master/doctor
	Occupation	1 = Professional technician (teacher/doctor/lawyer, etc.), 2 = Service staff (waiter/driver/salesman, etc.), 3 = Worker (factory worker/construction worker/ urban sanitation worker, etc.), 4 = Company employee, 5 = Civil servant/government staff/related public institution personnel, 6 = University student, 7 = Elementary school, middle and high school student, 8 = Private business owner, 9 = Other
	Satisfaction with current physical condition	1 = Very dissatisfied, 2 = Dissatisfied, 3 = General, 4 = Satisfied, 5 = Very satisfied
	Exercise frequency	1 = Almost every day, 2 = About 2-3 days, 3 = One week, 4 = One month or more
	Average monthly sports consumption	1 = Almost no consumption, 2 = 50-100 yuan, 3 = 101-300 yuan, 4 = 301-500 yuan, 5 = More than 500 yuan
	Consumption motivation	7 factors obtained by factor analysis

3.2 Source of Data and Descriptions

In this paper, focusing on the domestic residents, the questionnaire of " Residents' Sports Consumption Survey" was distributed on the WenJuanXing APP, an online platform providing functions equivalent to Amazon Mechanical Turk in China, the link is <https://www.wjx.cn/jq/94674039.aspx>.

The primary purpose of developing a scale is to structure and measure the variables in the model. The first reference is to

the earlier period of Nunnally (1978), who argued that when using the questionnaire method, there should be three or more measurement questions for each variable to ensure the questionnaire's validity. Therefore, the questionnaire designed in this study was designed with three or more question items for each variable.

The basic personal information of this study's scale mainly includes respondents' gender, age, education level, hours of

exercise, and sports consumption level. The personality variables were measured using the Mini-Marker scale proposed by Saucier in 1994 to measure the scores of different consumers on different dimensions of personality traits. The questionnaire used a Likert 7-point scale for each question item except for the basic personal information scale, with 1 indicating complete disagreement and 7 indicating complete agreement. The Motivation for Sports Consumption Scale (MSSC) compiled by Trail (et al. 2001) was mainly referred to in this study, and the Sports Consumption Behavior was mainly referred to as the Sports Consumption Behavior Influencing Factor Scale by (Zhang et al. 2007). This study referred to the above questionnaires and scales related to sports consumption to constitute the comprehensive questionnaire for this study.

By February 2, 2021, 244 valid questionnaires have been collected. IBM SPSS Statistics 26.0 was used for data analysis.

3.3 Description of Data

The description of residents' satisfaction with sports consumption and personality characteristics is shown in Table 3. Description of sports consumption motivation is shown in Table 4.

Table 3 shows that among the total respondents, consumer satisfaction is mainly concentrated in General and A little satisfied, accounting for 56.15% of the total. The ratio of men to women is basically equal, and the proportion of women is slightly higher than that of men. The age range of the respondents is extensive, with young and middle-aged people between 20- and 30-years old accounting for the majority. Among them, 80.73% of the respondents have a higher education background, mainly because most respondents are still university students and university staff. Currently, the respondents are not satisfied with their physical quality; 45.09% think their physical quality is only general. The frequency of physical exercise was evenly distributed, but the respondents were not enthusiastic about consuming sports products, and most did not pay for sports consumption.

TABLE 3. The description of residents' satisfaction with sports consumption and personality characteristics

Variable	Value of category									Total
	1	2	3	4	5	6	7	8	9	
Residents' sports consumption satisfaction	6	6	19	59	78	37	39			244
Gender	117	127								244
Age	23	127	20	54	12	8				244
Education level	10	21	16	106	91					244
Occupation	59	5	7	44	23	71	4	4	27	244
Satisfaction with current physical condition	11	36	110	77	10					244
Exercise frequency	52	73	67	52						244
Average monthly sports consumption	124	56	36	14	14					244

TABLE 4. Description of sports consumption motivation

Motivation	Range	Min	Max	Mean	Std.Dev.
Interpersonal motivation	5.68927	-3.23232	2.45696	9.57E-017	1.00
Body building and shaping motivation	5.55085	-3.23825	2.31259	4.85E-017	1.00
Will exercise motivation	7.01086	-3.89257	3.11829	-1.06E-016	1.00
Growth knowledge motivation	6.56023	-2.99235	3.56789	1.72E-016	1.00
Exercise physical motivation	7.26160	-4.34030	2.92131	1.90E-016	1.00
Psychological regulation motivation	6.66699	-3.59255	3.07444	-2.64E-016	1.00
Competition promotion motivation	7.19696	-2.56269	4.63427	9.57E-017	1.00

In table 4, all sports consumption motivation data are standardized. From the Mean column, interpersonal motivation and competition promotion motivation are the two most important motivations for consumers to consume sports. Bodybuilding and shaping motivation also encourage consumers to consume sports products. From the overall view of consumers, will exercise motivation and psychological regulation did not contribute significantly to sports consumption.

6 shows that the total model F-test has passed, indicating that the model is statistically significant.

TABLE 5. Model summary

Multiple R	R square	Adjusted R square	Apparent prediction error
0.776	0.602	0.546	0.398

Table 6. ANOVA

	Sum of squares	df	Mean square	F	Sig.
Regression	146.955	30	4.899	10.752	0.000***
Residual	97.045	213	0.456		
Total	244.000	243			

* p < 0.1, ** p < 0.05, *** p < 0.01

IV. EMPIRICAL RESULTS AND DISCUSSION

4.1 Empirical results

Bring the data of the explanatory variables and the explained variables set above into the "Analysis-Regression-Optimal scale regression" box in SPSS26.0. The results are shown in Table 5-Table 8.

Table 5 is the model summary for the empirical analysis, where $R^2 = 0.602$, the adjusted $R^2 = 0.546$, and the test in Table

Table 7 shows the standardized coefficient and its F-test, and the test results indicate that among personality characteristics factors, at the significance level of 1%, occupation, satisfaction with current physical condition and exercise frequency pass the test; occupation is an unordered categorical variable, and the coefficient is positive indicating a

positive effect of overall occupation on Satisfaction; The coefficient of satisfaction with current physical condition is positive, indicating that the more satisfied the residents are with their current physical condition, the higher satisfied they are with sports consumption; The coefficient of exercise frequency is negative, indicating that the longer the average time residents spend exercising once, the lower the satisfaction with sports consumption. At the significance level of 10%, the education level passes the test with a positive coefficient, indicating that the residents' satisfaction with sports consumption increases with the improvement of their educational. Gender, age and average monthly sports consumption variables fail to pass the test, and the coefficient of age in this variable is negative, indicating that probably age growth has a negative impact on

residents 'sports consumption satisfaction, and the average monthly sports consumption coefficient is positive, indicating that probably average monthly sports consumption increase may have a positive impact on residents' sports consumption satisfaction.

Among the consumption motivation factors, at the significance level of 1% , interpersonal motivation, body building and shaping motivation, will exercise motivation, growth knowledge motivation, exercise physical motivation, psychological regulation motivation, competition promotion motivation all pass the test; the coefficients are positive, indicating that the sports consumption motivation formed by residents has strong guidance and purpose, and has positive effect on sports consumption satisfaction.

TABLE 7. Coefficient

	Standardized coefficient		df	F	Sig.
	Beta	Bootstrap (1000) estimation of std. error			
Gender	0.010	0.032	1	0.102	0.750
Age	-0.136	0.099	2	1.899	0.152
Education level	0.114	0.074	3	2.346	0.074
Occupation	0.184	0.052	8	12.562	0.000***
Satisfaction with current physical condition	0.125	0.054	4	5.353	0.000***
Exercise frequency	-0.151	0.058	3	6.752	0.000***
Average monthly sports consumption	0.055	0.068	2	0.648	0.524
Interpersonal motivation	0.260	0.059	1	19.813	0.000***
Body building and shaping motivation	0.128	0.055	1	5.478	0.020**
Will exercise motivation	0.166	0.053	1	9.920	0.002**
Growth knowledge motivation	0.383	0.057	1	44.399	0.000***
Exercise physical motivation	0.277	0.059	1	21.918	0.000***
Psychological regulation motivation	0.288	0.063	1	21.016	0.000***
Competition promotion motivation	0.151	0.056	1	7.128	0.008***

Dependent variable: sports consumption satisfaction
* p < 0.1, ** p < 0.05, *** p < 0.01

TABLE 8. Correlation and tolerance

	Correlation			Importance	Tolerance	
	Zero-order	Partial	Part		After transformation	Before transformation
Gender	0.144	0.014	0.009	0.002	0.764	0.756
Age	0.004	-0.184	-0.118	-0.001	0.756	0.653
Education level	0.068	0.152	0.097	0.013	0.722	0.682
Occupation	0.103	0.264	0.172	0.032	0.875	0.824
Satisfaction with current physical condition	0.153	0.186	0.120	0.032	0.917	0.886
Exercise frequency	-0.182	-0.208	-0.134	0.046	0.789	0.752
Average monthly sports consumption	0.279	0.080	0.051	0.025	0.864	0.836
Interpersonal motivation	0.339	0.351	0.237	0.146	0.825	0.829
Body building and shaping motivation	0.173	0.187	0.120	0.037	0.879	0.878
Will exercise motivation	0.282	0.246	0.160	0.078	0.935	0.927
Growth knowledge motivation	0.429	0.509	0.373	0.273	0.948	0.949
Exercise physical motivation	0.271	0.390	0.267	0.125	0.925	0.938
Psychological regulation motivation	0.320	0.401	0.276	0.153	0.917	0.896
Competition promotion motivation	0.157	0.217	0.140	0.039	0.864	0.871

Dependent variable: sports consumption satisfaction

Table 8 is the results of further analysis of the model. The first is the correlation analysis, which gives the correlation analysis of the respective independent variables on the dependent variable. The partial correlations are the estimate

after controlling for the effects of other variables on the dependent and independent variables, while part correlations only control for the effects of other variables on the dependent variable. The second is the influence importance, which is the

percentage of importance of the independent variables in the model calculated from the standardized coefficients and correlation coefficients. The importance of all variables combined equals 100%, with larger values indicating that the variable is more important for the prediction of the dependent variable. Thus, among the factors tested that passed the significance test of the standardized coefficient, growth knowledge motivation, psychological regulation motivation, interpersonal motivation and exercise physical motivation have the greatest influence on residents' sports consumption satisfaction, which is also the main motivations of residents' sports consumption. The third is tolerance, which indicates that the proportion of the influence of the variable on the dependent variable that cannot be explained by other independent variables, the larger the better, which reflects the collinearity of the independent variables. If the tolerance of any variable is too small, the analysis results of the optimal scale regression may be incorrect. It can be seen in Table 15 that the tolerance of each variable is in high, indicating that a high proportion of the effect of the variable on the dependent variable cannot be explained by other independent variables and that collinearity is basically absent.

V. DISCUSSION

After testing, we found that among the personality trait factors, Occupation, Satisfaction with current physical condition, and Exercise frequency passed the 1% significance test. Occupation and satisfaction with current physical condition indicate that the more satisfied residents are with their current physical condition, the more they engage in. The coefficient of Exercise frequency is negative, which indicates that the longer the average time residents exercise once, the lower their satisfaction with sports consumption. At the 10% significance level, the coefficients of Education level and Average monthly sports consumption passed the test with positive coefficients, indicating that residents' satisfaction with sports consumption increases with the increase in education and sports consumption level. The coefficient of the variable Age is negative, indicating that age growth may negatively affect residents' satisfaction with sports consumption.

Among the factors of consumption motivation, Interpersonal motivation, Body building and shaping motivation, Will exercise motivation, Growth knowledge motivation, Exercise physical motivation, psychological regulation motivation and Competition promotion motivation all passed the test with positive coefficients. This result indicates that the sports consumption motivation formed by residents has a strong guiding and intended effect on sports consumption satisfaction.

Through the validation of the optimal scale regression model, except for gender, age and average monthly sports consumption, which do not pass the significance test on residents' satisfaction with sports consumption, all the explanatory variables have a significant effect on the explained variable. The order of influence and importance arranged in Table 8 is: growth knowledge motivation, psychological regulation motivation, interpersonal motivation, exercise physical motivation, will exercise motivation, exercise

frequency, competition promotion motivation, body building and shaping motivation, occupation, current physical condition satisfaction, average monthly sports consumption, education level, gender and age.

First, individual characteristics affect the sports consumption satisfaction to different degrees. Although residents are engaged in different occupations, their occupation nature or other factors also positively affect residents' sports consumption satisfaction. On the contrary, the longer the average time residents exercise once, the lower their satisfaction with sports consumption, that is, the less physical exercise or consumption, the lower their Satisfaction. Education level is also an important factor affecting residents' sports consumption. The higher the level of education, the more attention to the various effects of sports consumption, so the stronger the willingness to make sports consumption, the higher the satisfaction. Although the variables of gender, age and average monthly sports consumption do not pass the significance test, they also have a certain impact on satisfaction. For example, the average monthly sports consumption involves the choice of the residents' sports consumption and the residents' income; the gender differences also affect the residents' sports consumption, such as the consumption type and time; the age affects residents' physical function, which in turn affects the residents' sports consumption.

Second, the influence of growth knowledge motivation, psychological regulation motivation, interpersonal motivation, exercise physical motivation, will exercise motivation, exercise frequency, competition promotion motivation, body building and shaping motivation, occupation and current physical condition satisfaction is relatively high. Most people consume sports with purposes, such as exercising, building and making friends. From the empirical results, residents' motives for sports consumption are mostly knowledge growth, psychological regulation, interpersonal communication, physical exercise, will exercise, competition promotion and body building and shaping, and the stronger the motives, the higher the residents' satisfaction with sports consumption. In addition, the more satisfied residents are with their current physical conditions, the more willing they are to consume sports to further improve their physical functions.

VI. CONCLUSION AND POLICY IMPLICATIONS

Individual characteristics affect sports consumption satisfaction to different degrees, occupation, current physical condition satisfaction, exercise frequency, and education level passed the test. This result aligns with (Moueleu Ngalagou et al. 2019), who found that faculty members with occupational depletion usually have no relationship with physical activity due to mental exhaustion and a poor work environment. Paar (et al. 2021) found that material wealth, income level, and sports socialization influence and constrain sports. This finding is consistent with the finding that consumption levels. The gender, age, and average monthly sports consumption variables did not pass the test in this study. This result differs significantly from the results of (Lu 2009), who noted in his study that the factors affecting customer consumption satisfaction are mainly reflected in the fact that there are significant differences in

terms of gender, age, and aspect of customers. This difference may be because Chinese consumers' consumption philosophy, level, and personal consciousness have changed significantly with time and economic factors.

Residents' consumption motives positively influence consumer satisfaction. Growth knowledge motive, psychological adjustment motive, interpersonal interaction motive, and physical exercise motive have the most significant influence on residents' sports consumption satisfaction and are the main motives for residents' sports consumption. The high overlap of sports consumption satisfaction factors and dominant motives reflects that satisfaction is the relationship between one's expectation of a good or a service and its practical application. This finding aligns with (Sun 2015) survey study, which found that the two highest-rated aspects of consumer satisfaction were expressed in both coaches and training effectiveness because coaches' guidance and training effects represent consumers' expectations of gaining fitness knowledge and exercise regimes.

The findings of this study have important policy implications. First, Differentiation guides the individual consumption demand of most sports consumers. According to consumer personality differences, guide them to consume different categories of sports products. Young consumers are the most active consumer team in the social consumer groups, and they are the main consumers of some emerging sports products. Therefore, it can actively guide young consumers, cultivate their healthy and good sports interests, and directly contribute to sports consumption, to form a better sports consumption trend. And highly educated residents generally have a strong sports consumption intention, pay more attention to their own health or shape beauty, and their highly education generally corresponds to higher income now or in the future, so we should actively pay attention to sports consumption preferences of this group. Its preferences and income transform into a driving force of sports consumption, which helps to stimulate the development of the corresponding sports market. For different occupations can be guided to consume sports in line with the occupational nature. For consumers with different satisfaction with exercise frequency and current physical condition satisfaction, they should be guided to choose sports suitable for their own conditions and time, adjust the frequency of sports or consumption, and improve the satisfaction of sports consumption.

Second, targeted to stimulate the consumption motivation of sports consumers. The results of factor analysis show that sports consumers have seven motivations, including interpersonal communication, body building and shaping, will exercise, growth knowledge, physical exercise, psychological regulation and competition promotion, all of which have a positive effect on promoting consumer satisfaction. Among them, growth knowledge motivation, psychological regulation motivation, interpersonal motivation and physical exercise motivation have the greatest impact on residents' sports consumption satisfaction. Therefore, in the production of sports products or services, fully reflect the products or services they provide to consumers with the needs of motivation. For example, if the motive of growth knowledge, the satisfaction of

gaining the knowledge should be fully given to consumers in the supply of products. In addition to the sensory pleasure, a ball game provides more history, rules and anecdotes about the game, increases the knowledge points, satisfies the needs of consumers for increasing the knowledge, and improves the consumption satisfaction.

Third, continue to step up supply-side structural reform of the sports industry. With the improvement of the quality of the whole people and the expansion of healthy life and interests, residents will also put forward higher requirements for the content and form of sports products or services, and it is imperative to strengthen the supply-side structural reform of the sports industry. The first is to continuously improve the government's policy guidance and governance level by giving more policy support to sports production departments, to expand their production and innovation space, to provide consumers with a wide range of products or services. The second is innovate the business model of sports consumption market, constantly develop new sports products or services, "Internet + sports", "tourism + sports" and other forms to meet the needs of the larger number of residents for sports consumption. The third is to improve the quality of sports products or services, in the sporting goods, strengthen the brand effect and technological innovation ability of manufactures; in various types of participatory sports consumption, pay attention to meet the general demand of public sports consumption, but also reflect the personalized needs of consumers; in the event viewing, strengthen the reform of domestic professional events, improve the competitive level, to meet the growing demand of consumers to watch the game.

Fourth, systematically build a good sports consumption environment. Providing a good sports consumption environment for sports consumers is an important guarantee to ensure the healthy development of the sports consumption market. Firstly, we should adhere to the decisive role of market in the allocation of sports resources, continuously increase the supply of public sports services by the government, construct a fair and healthy market environment; strengthen the investment and construction of sports consumption places and facilities, strengthen the construction of sports infrastructure and improve relevant supporting services, provide convenient conditions and good consumption experience for residents to carry out sports consumption, and improve the satisfaction of residents' sports consumption; build sports big data intelligence platform, dynamically display real-time changes of sports production and consumption market, provide data support for the government to formulate sports consumption policies and for enterprises to seek market opportunities.

VII. LIMITATION

This paper explores the influence of individual characteristics and consumption motivation on sports consumption satisfaction and proposes policy recommendations based on the research results. This study has achieved preliminary research results, but some shortcomings remain. At the same time, many groups of research work and ideas need to continue to be explored and implemented.

First, although this study attempted to cover different ages, educational backgrounds, and jobs when selecting the scope of the study, China has a large population, and consumers' personalities vary greatly depending on their regions and cultural backgrounds. There are also many foreigners coming to work and study in China. Therefore, the research population of this paper is still limited compared to China's huge population. We hope that we can conduct more comprehensive research on different regions and countries in future studies.

Second, this study mainly examines the influence of individual characteristics and consumption motivations on the satisfaction of sports consumers in the form of questionnaires. That because of the late start of sports consumption in China and the incomplete national statistics on sports consumption makes it difficult to objectively and accurately reflect the changing pattern of tourism consumption. Thus, this paper lacks relative data to complete the more mathematical model statistics, which makes this paper have some limitations. However, this deficiency will be compensated with the gradual improvement of the sports consumption market and sports consumption-related statistics. The research on sports consumption satisfaction will undoubtedly be more scientific and comprehensive.

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Funding: This work was supported by Social Science Funding Project of Jiangsu Province : Study on Power and Promotion Strategy of high quality development of Jiangsu Sports Industry[20TYD004]

Conflict of interest: The authors declare that they have no conflict of interest.