Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4, 215-229
2025
Publisher: Learning Gate
DOI: 10.55214/25768484.v9i4.5956

An empirical study on the impact of digital platform usage on sports consumption behavior based on the theory of planned behavior

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Abstract: This study aims to examine how digital platform usage influences sports consumption behavior by integrating it into the Theory of Planned Behavior (TPB), emphasizing the mediating role of consumption intention. A quantitative approach was adopted, collecting 318 valid responses from Chinese users of digital platforms related to sports. Structural Equation Modeling (SEM) was employed to test the hypothesized model, including confirmatory factor analysis and bootstrapping to examine mediation effects. Results show that subjective norms, attitudes, and digital platform usage all significantly predict sports consumption intention. Attitude exhibited the strongest effect on intention. Consumption intention, in turn, significantly influences actual sports consumption behavior. Notably, digital platform usage does not directly affect consumption behavior but exerts an indirect effect through intention. The mediating role of intention was confirmed in all proposed pathways. Digital platforms shape sports consumption behavior primarily by influencing users' psychological intentions rather than direct behavioral activation. The findings suggest that platform operators and sports marketers should focus on enhancing user intention through positive attitudes and social influence, rather than solely promoting direct transactions.

Keywords: *Consumption intention, Digital platform usage, Mediation mechanism, Sports consumption behavior, Structural Equation Modeling, Theory of Planned Behavior.*

1. Introduction

With the rapid development of digital technology, digital platforms are profoundly changing people's lifestyles and consumption patterns, and consumption behavior in the field of sports is also showing a new trend of platformization, intelligence, and socialization [1]. In this context, more and more consumers are beginning to obtain sports information, participate in sports activities, or complete the purchase of sports products through fitness apps, sports live broadcasts, social media and other channels. Digital platforms are becoming an important field for sports consumption [2]. However, despite the increasing number of sports consumption channels, user behavior is still restricted by various factors such as cognitive bias, lack of motivation for participation, and lack of trust in the platform. Consumption behavior is in the real dilemma of structural differentiation and insufficient motivation transformation [3].

At present, the academic community has carried out many explorations on sports consumption behavior based on the theory of planned behavior (TPB), verified the role of variables such as attitudes, subjective norms and intentions in explaining consumer behavior, and achieved rich theoretical results and empirical foundations [4]. However, as digital platforms have become mainstream communication and consumption media, there are still obvious theoretical gaps and research deficiencies in how to incorporate the use of digital platforms into the TPB theoretical framework and systematically reveal

History: Received: 14 January 2025; Revised: 9 March 2025; Accepted: 14 March 2025; Published: 3 April 2025
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their mechanism of action on sports consumption behavior [5]. To this end, this study starts from the perspective of TPB, integrates digital platform usage behavior, constructs a structural model containing five core variables, and systematically explores its direct and indirect impact mechanism on sports consumption behavior, aiming to expand the application boundaries of TPB theory in the context of digital consumption, and provide theoretical support and empirical basis for platform optimization and policy formulation.

2. Theoretical Basis and Research Hypothesis

2.1. Overview of Planned Behavior Theory

Theory of Planned Behavior (TPB) was developed by Ajzen [4] based on the theory of rational behavior to explain and predict individual behavior under conscious control. TPB believes that an individual's behavioral intention is the direct antecedent of actual behavior, and the behavioral intention itself is affected by three key factors: Attitude, Subjective Norm, and Perceived Behavioral Control. Behavioral attitude refers to an individual's subjective evaluation of the outcome of a certain behavior; subjective norm reflects the social pressure perceived by an individual from important others or groups to engage in a certain behavior; perceived behavioral control is the individual's perception of whether he or she can implement the behavior. However, with the development of technological changes and the media environment, digital platforms have gradually become an important variable affecting consumer behavior. Therefore, in this study, combined with the theoretical structure of TPB, "digital platform use" is introduced as one of the influencing factors to better explain the formation mechanism of sports consumption behavior.

2.2. Research Hypothesis

2.2.1. The Influence of Subjective Norms, Attitudes and Digital Platform Use on Sports Consumption Intention

Subjective norms refer to the social pressure perceived by individuals, that is, the degree to which important others expect them to engage in or not engage in a certain behavior [4]. In the field of sports consumption, studies have shown that subjective norms have a significant impact on individuals' sports participation intentions. St Quinton and Brunton [6] found that support from friends and family significantly enhanced individuals' intentions to participate in sports activities. Hagger, et al. [7] meta-analysis also confirmed that subjective norms are an important factor in predicting sports behavior intentions. Similarly, Qi, et al. [8] pointed out that there is a significant correlation between social support and sports activity intentions of the elderly. In addition, Kim, et al. [9] found that subjective norms have a direct impact on the sports participation intentions of young people. Rhodes and De Bruijn [10] also emphasized that the social environment plays an important role in the formation of individuals' sports behavior intentions. Behavioral attitude refers to an individual's positive or negative evaluation of a specific behavior, which is one of the key factors affecting behavioral intentions [4]. In the field of sports consumption, studies have shown that positive behavioral attitudes help enhance an individual's sports consumption intention. Guo and Li [11] found that students' positive attitudes toward sports activities are closely related to their intention to participate. Sangwan, et al. [12] also showed that attitude is an important factor in predicting team sports participation intention. At the same time, Calogiuri, et al. [13] pointed out that tourists' attitudes toward outdoor sports activities significantly affect their intention to participate. In addition, Shi and Ren [14] found that attitude plays a key role in predicting sports viewing intention.

With the popularity of digital platforms, individuals' use behavior on these platforms may affect their sports consumption intention. Studies have shown that digital platforms can enhance users' participation intention by providing information, social interaction and incentive mechanisms. Ogiso, et al. [15] pointed out that the use of sports websites enhances users' intention to watch games, and users can participate in sports events more conveniently through sports websites. Yousaf, et al. [16] research shows that brand interaction on social media increases users' purchase intention. Brand assets directly affect purchase intention through variables such as attitude, loyalty, popularity, image and trust, while

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 215-229, 2025
DOI: 10.55214/25768484.v9i4.5956

social media interactive advertising, as a mediating variable, further strengthens the impact of brand assets on purchase intention. Wang and Xu [17] pointed out that the social function of fitness apps promotes users' continued use intention. Social interaction is one of the primary motivations for heavy users of fitness apps, and social interaction has a significant impact on users' continued use intention.

H_1: Subjective norms have a positive impact on sports consumption intention.
H_2: Attitudes have a positive impact on sports consumption intention.
H_3: Digital platform use has a positive impact on sports consumption intention.

2.2.2. Direct Influence of Subjective Norms, Attitudes and Digital Platform Use on Sports Consumption Behavior

Subjective norms not only affect behavioral intentions, but may also directly affect actual behavior. Studies have shown that social pressure or support can directly prompt individuals to engage in certain behaviors. He and Wan [18] explained the influencing factors of youth sports consumption behavior based on the theory of planned behavior, pointing out that subjective norms are the main variables affecting youth sports consumption behavior, and behavioral attitudes and perceived behavioral control variables will also have a smaller impact on their sports consumption behavior. Digital platforms not only indirectly affect sports consumption behavior by affecting intentions, but may also directly promote actual consumption actions. Tian, et al. [19] explored the relationship between media use and sports participation behavior, including the application of social media in customer relationship management, and the influencing factors of sports consumption behavior. The use of sports apps, live broadcast platforms or social media functions such as "ordering", "buying memberships", and "participating in activities" makes the platform use behavior and consumption behavior have a direct behavioral chain

H_4: Subjective norms have a positive impact on sports consumption behavior.
H_5: Attitudes have a positive impact on sports consumption behavior.
H_6: The use of digital platforms has a positive impact on sports consumption behavior.

2.2.3. Sports Consumption Intention and Sports Consumption Behavior

Behavioral intention refers to the action tendency or motivation of an individual to take a specific behavior. In the planned behavior theory model, behavioral intention is a prerequisite and factor for participation in behavior, and behavioral intention is jointly influenced by subjective norms, behavioral attitudes, and perceived behavioral control factors. In terms of participation intention and participation behavior, some scholars have conducted some valuable research. Su and Xu [20] found that there was a significant correlation between college students' intention to watch the Chinese Super League live and their actual behavior; Zhu [21] believed that behavioral intention in the planned behavior theory is an effective way to predict college students' sports behavior, so it is important to cultivate college students' sports participation awareness; Lin and Bai [22] and others studied college students' academic procrastination behavior and pointed out that the planned behavior theory also has a good explanatory power for procrastination behavior, and procrastination intention has an important impact on procrastination behavior. Based on the above research results, the following hypothesis is proposed here:

H_7: Sports consumption intention has a positive impact on sports consumption behavior.
H_8: Sports consumption intention mediates the relationship between subjective norms and sports consumption behavior.
H_9: Sports consumption intention mediates the relationship between behavioral attitudes and sports consumption behavior.
H_{10}: Sports consumption intention mediates the relationship between digital platform use and sports consumption behavior

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2.3. Research Conceptual Model

The conceptual model of this study is based on the model of the theory of planned behavior, and has been modified to some extent. In the model, the perceived control behavior of the original theory of planned behavior model is replaced by the use of digital platforms. The reason for this design is based on the principle of decomposed planning theory. In the decomposed planning theory, perceived behavioral control is decomposed into two constructs based on the Ajzen's research that include self-efficacy and facilitating condition which is decomposed into the resource facilitating condition and the technology facilitating condition [23]. Therefore, this study created a new theoretical model based on the theory of planned behavior, replacing perceived control behavior with the use of digital platforms (see Figure 1).

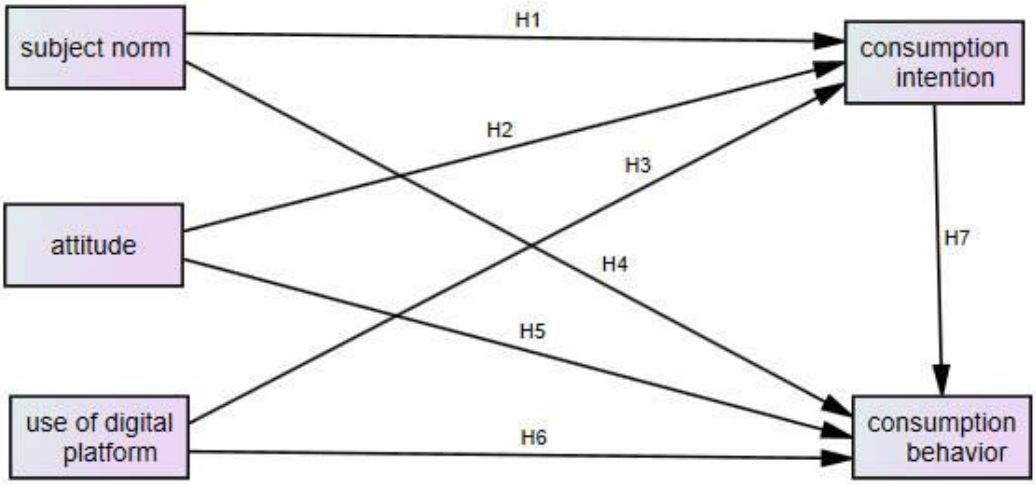

Figure 1.
Conceptual model.

3. Research Design

3.1. Research Methods

This study builds a research model based on the Theory of Planned Behavior (TPB). The decision to use quantitative research as the main research method has specific reasons and theoretical basis. Chali, et al. [24]. pointed out that quantitative strategies involved complex experiments with many variables and treatments (factorial designs and repeated measure designs). They also included elaborate structural equation models that incorporated causal paths and the identification of the collective strength of multiple variables. This study is used to explore the relationship between independent variables, mediating variables and dependent variables. Therefore, quantitative research methods are very suitable.

3.2. Questionnaire Design

The scale of this study consists of six parts, covering core variables such as dem The scale of this study consists of six parts, covering core variables such as demographic information, use of digital platforms, attitudes, subjective norms, willingness to purchase, and sports consumption behavior. All items use the Likert 5-point scale, with a rating range from 1 = "strongly disagree" to 5 = "strongly agree" to measure the respondents' degree of agreement with each statement.

The first part collects the basic characteristics of the respondents, including: gender, age, education, monthly income, and monthly sports consumption expenditure. The second part has the independent variables of subjective norms, attitudes, and use of digital platforms, the mediating variable is sports

Edelweiss Applied Science and Technology
ISSN: 2576-8484
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consumption willingness, and the dependent variable is sports consumption behavior. Subjective norms consist of 5 items, referring to the research of Ji and Nie [25]: SN1: My friends or family would suggest that I buy sports-related products or services through digital platforms; SN2: The sports consumption behaviors I see on social media (such as celebrity athlete endorsements and fan discussions) will affect my consumption decisions; SN3: I hope that my social groups will recognize my sports consumption behaviors on digital platforms; SN4: I will try new sports consumption methods because of discussions in my social circle; SN5: The recommendations of public figures or Internet celebrities on sports consumption will affect my choices. Consumption attitudes consist of 5 items, referring to the research of Guo and Li [11]: AT1: I think that sports consumption through digital platforms is a beneficial experience; AT2: I have a positive attitude towards buying sports-related products/services online; AT3: I believe that digital sports platforms can enhance my sports consumption experience; AT4: I think that using digital platforms for sports consumption is more interesting than traditional methods; AT5: I think that digital sports consumption can increase my sports participation. The use of digital platforms consists of 5 items, referring to Zhu, et al. [26] study on online shopping: DP1. I often obtain sports event information through social media (such as Weibo, Instagram, Facebook); DP2. I often use sports live broadcast platforms (such as Tencent Sports, ESPN, YouTube) to watch sports events; DP3. I will use fitness apps (such as Keep, Nike Training Club) to get exercise advice and exercise; DP4. Digital payment (such as Alipay, Apple Pay) makes me more inclined to buy sports-related products or services online; DP5. I think digital platforms make sports consumption more convenient and efficient. The willingness to consume sports consists of 5 items, referring to Wang [27] study: CI1. I am willing to purchase sports products or services through digital platforms (such as apps, social media); CI2. If there is a suitable sports consumption opportunity, I am more inclined to purchase on digital platforms; CI3. In the future, I plan to increase my sports consumption expenditure on digital platforms; CI4. I am willing to try more sports consumption models provided by digital platforms; CI5. I am willing to recommend sports consumption on digital platforms to others. There are 5 items in sports consumption behavior, referring to the research of Ma and Wang [28]: CB1. I have purchased sports equipment, tickets or fitness classes on digital platforms in the past six months; CB2. I am willing to pay for digital sports content (such as subscribing to sports live broadcasts and purchasing virtual sports goods); CB3. I regularly participate in sports consumption through digital platforms, such as purchasing fitness classes or online sports betting; CB4. My spending on sports consumption has increased due to the convenience of digital platforms; CB5. I prefer to use digital platforms for sports consumption rather than offline channels.

3.3. Sample and Data Collection

In order to fully understand the impact of digital platform use on sports consumption behavior, this study adopts non-probability sampling method, combined with purposeful sampling and convenience sampling strategies, to recruit digital platform users with sports consumption experience in multiple platforms and physical places as research samples. The questionnaire was distributed through a combination of online and offline methods to enhance the diversity and representativeness of the sample. The data collection period was from February 1, 2025 to February 10, 2025. A total of 350 questionnaires were distributed, and 318 valid questionnaires were collected, with an efficiency of 90.9%. The online questionnaire was mainly published through the "Questionnaire Star" platform, and the distribution channels included WeChat public accounts, WeChat groups, QQ sports groups, and fitness App user communities; the offline questionnaire was filled in paper questionnaires in some gyms, university campuses, sports parks, sports consumption business districts and other places in Guangdong Province. All questionnaire data submitted online will be automatically stored in the Questionnaire Star system, and the data can be exported as Excel files for subsequent statistical analysis; offline questionnaires are uniformly stored in Excel files. All respondents signed informed consent and participation was completely voluntary. The questionnaire was filled out anonymously and the survey results were used only for academic research purposes. Sample inclusion criteria included: i) age 18 and

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 215-229, 2025
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above; ii) experience in using digital platforms (such as fitness apps, sports live broadcast platforms, social media, etc.).

3.4. Institutional Review Board Statement

This study's Ethical approval was obtained from the Academic Committee of Dongguan City University, All participants provided informed consent prior to participation, and the survey was conducted anonymously. Participation was entirely voluntary, and data were used solely for academic research purposes.

Table 1.
Descriptive statistical analysis of samples.

Category	Options	Frequency/N	Percent/100%
Gender	Male	218	68.6
	Female	100	31.4
Age	18-24	84	26.4
	25-30	101	31.8
	31-40	83	26.1
	41 years and above	50	15.7
Education	High school and below	106	33.3
	Undergraduate	136	42.8
	Master	56	17.6
	Doctor	20	6.3
Monthly income	3000 below	91	28.6
	3000-5000	88	27.7
	5000-12000	105	33.0
	12000 That's all	34	10.7
Monthly consumption	300 Yuan or less	130	40.9
	300-500	171	53.8
	500-1000	17	5.3
	1000 more than yuan	0	0

4. Empirical Analysis

4.1. Descriptive Statistical Analysis

As shown in Table 1, In this study, a total of 318 valid questionnaires were collected, and the basic demographic characteristics of the sample were statistically analyzed to understand the distribution of the structure of the respondents. the sample covers dimensions such as gender, age, education, monthly income and sports consumption expenditure. The specific results are as follows: Among all the respondents, males accounted for 68.6% (n=218) and females accounted for 31.4% (n=100). The age of the respondents was concentrated in the young group, among which 25-30 years old accounted for the highest proportion, accounting for 31.8% (n=101), followed by 18-24 years old (26.4%, n=84) and 31-40 years old (26.1%, n=83), and those over 41 years old accounted for 15.7% (n=50). In terms of education, 42.8% of the respondents had a bachelor's degree (n=136), followed by high school and below (33.3%, n=106), master's degree (17.6%, n=56) and doctoral degree (6.3%, n=20). The survey results show that 33.0% of the respondents have a monthly income of 5,000-12,000 yuan (n=105), followed by less than 3,000 yuan (28.6%, n=91) and 3,000-5,000 yuan (27.7%, n=88), while the high-income group of more than 12,000 yuan accounts for 10.7% (n=34). In terms of sports consumption expenditure, most respondents are relatively conservative, with the highest proportion of 300-500 yuan, accounting for 53.8% (n=171), followed by less than 300 yuan (40.9%, n=130). It is worth noting that only 5.3% (n=17) spent more than 500 yuan, and there were no consumers who spent more than 1,000 yuan.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 215-229, 2025
DOI: 10.55214/25768484.v9i4.5956

4.2. Scale Reliability and Validity Test

Table 2.
Scale reliability and validity test.

Dimension	ITEM	Factor Loading	Cronbach'a	CR	AVE
Subject norm (SN)	SN2	0.814	0.815	0.872	0.577
	SN5	0.786			
	SN3	0.749			
	SN4	0.742			
	SN1	0.702			
Attitude (AT)	AT2	0.798	0.876	0.868	0.569
	AT3	0.786			
	AT4	0.785			
	AT5	0.726			
	AT1	0.667			
Digital platform (DP)	DP5	0.800	0.813	0.86	0.553
	DP3	0.795			
	DP2	0.764			
	DP4	0.741			
	DP1	0.599			
Consumption intention(CI)	CI3	0.771	0.796	0.849	0.53
	CI2	0.753			
	CI4	0.744			
	CI5	0.694			
	CI1	0.673			
Consumption behavior CB）	CB2	0.809	0.889	0.886	0.608
	CB3	0.801			
	CB1	0.787			
	CB5	0.775			
	CB4	0.723			

The internal consistency reliability test mainly uses Cronbach's α coefficient and composite reliability (CR). The Cronbach's α coefficients of all latent variables are greater than 0.70, indicating that each scale has good internal consistency (Hair *et al*, 2019). As shown in Table 2, the α coefficient of the sports consumption behavior (CB) dimension is 0.889, which is the highest reliability construct. The other dimensions such as subjective norms (SN), attitudes (AT), digital platform use (DP) and consumer intentions (CI) are also between 0.79–0.87, which are in line with academic research standards. In addition, the composite reliability (CR) index is also all over 0.80, which further verifies that the measurement indicators are highly consistent within each latent variable, indicating that each construct has good internal structural stability [29].

Convergent validity means that the measurement items under the same latent variable should be highly correlated. According to the standard of Cheung and Wang [30] if the standardized factor loadings are all greater than 0.50 and the AVE value is greater than 0.50, the convergent validity can be considered good. As shown in Table 2, the standardized factor loadings of each item are between 0.599 and 0.814, and most of them are over 0.70, which meets the requirements. In addition, the AVE values of the five latent variables are between 0.53 and 0.608, all higher than the judgment standard of 0.50, indicating that the construct can better explain the variance of its observed variables, and the convergent validity is effectively supported.

4.3. Confirmatory Factor Analysis

In order to test the fit of the measurement model and the construct validity of each latent variable, this study used AMOS 24.0 to conduct confirmatory factor analysis (CFA) on the five latent variables. In the analysis, multiple conventional model fit indicators were used as judgment criteria. According to

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the suggestions of Hair, et al. [29] the judgment criteria for good model fit are usually: $\chi^2/df < 3$, GFI, CFI ≥ 0.90, AGFI ≥ 0.80, RMSEA ≤ 0.08. In the preliminary analysis stage, this study found that some variables had poor fit. Therefore, according to modification indices (MI), it was recommended to delete the items with the largest MI value and low fit contribution. Subsequently, the model fit was significantly improved.

The subjective norm dimension contains 5 items, and the preliminary fitting results are: χ^2=2.898, df=5, χ^2/df=0.580, GFI=0.996, AGFI=0.989, CFI=1.000, RMSEA=0.000. All indicators show that the model fits well, and no item modification is performed. The initial model fit index is not ideal. According to the modification indices, it is found that the AT4 item produces the largest MI index of 14.794. After deleting the item AT4 and refitting, the indicators are: χ^2=2.306, df=2, χ^2/df=1.153, GFI=0.996, AGFI=0.982, CFI=1.000, RMSEA=0.022, indicating that the model fits well. The initial DP model fit is not ideal, and the DP5 item produces the largest MI index of 19.120. According to the MI recommendation, the DP5 item is deleted. The modified model index is: χ^2=3.512, df=2, χ^2/df=1.756, GFI=0.994, AGFI=0.998, CFI=0.998, RMSEA=0.049, which meets the ideal fit standard. The CI variable CI5 item produces the largest MI index, which is 54.900. After MI analysis, the CI5 item is deleted. The modified model index is: χ^2=2.820, df=2, χ^2/df=1.410, GFI=0.995, AGFI=0.977, CFI=0.999, RMSEA=0.036, and the model fit is good. The initial fit of the CB variable is not ideal. The CB3 item produces the largest MI index, which is 12.144. After deleting the CB3 item with the largest MI value, refitting is performed. The corrected indicators are: χ^2=3.450, df=2, χ^2/df=1.725, GFI=0.995, AGFI=0.974, CFI=0.998, RMSEA=0.036, which meet the measurement model fitting criteria. In summary, all variables achieved good fitting indicators after correction, indicating that the measurement model of this study has strong structural adaptability and theoretical rationality.

4.4. Structural Model Fit Test

The fit indexes of the structural model (Figure 2) of this study are as follows: chi-square value (χ^2) = 368.641, degrees of freedom (df) = 179, χ^2/df = 2.059 (< 3.0, good), GFI = 0.905 (≥ 0.90, good), AGFI = 0.877 (≥ 0.80, good), IFI = 0.964, CFI = 0.963, TLI = 0.957 (all ≥ 0.90, excellent), RMSEA = 0.058 (< 0.08, within the acceptable range). According to the judgment criteria for the goodness of fit of the structural equation model by Yılmaz and Koğar [31] the above indicators show that the model (Figure 1) of this study has a good fit with the sample data. In particular, CFI, IFI and TLI all exceeded 0.95, indicating that the model fit was excellent; RMSEA was 0.058, which was also in the "good fit" range. The χ^2/df value was 2.059, which was less than 3, and also met the model rationality requirements. In summary, the structural model constructed in this study has a good overall fitting effect, indicating that there is a high degree of consistency between the research model structure and the actual data.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
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DOI: 10.55214/25768484.v9i4.5956

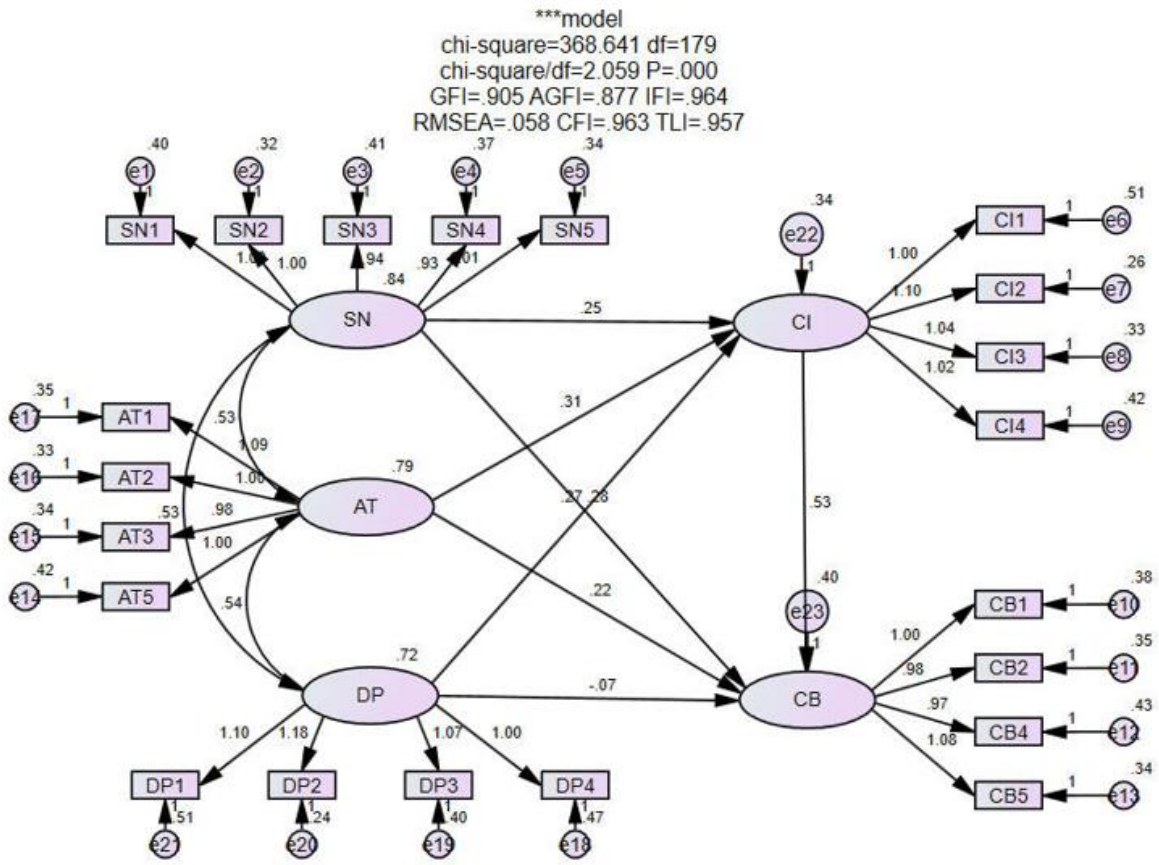

Figure 2.
Structural model fit test.

4.5. Path Hypothesis Test

Table 3.
Path hypothesis tests.

Hypothesis	Path			Unstd Estimate	SE	CR	P	Std Estimate	Result
H1	CI	<---	SN	0.253	0.067	3.759	***	0.263	Yes
H2	CI	<---	AT	0.31	0.075	4.153	***	0.315	Yes
H3	CI	<---	DP	0.274	0.082	3.363	***	0.265	Yes
H4	CB	<---	CI	0.535	0.085	6.302	***	0.470	Yes
H5	CB	<---	DP	-0.068	0.09	-0.761	0.447	-0.058	NO
H6	CB	<---	AT	0.223	0.084	2.649	0.008	0.198	Yes
H7	CB	<---	SN	0.277	0.076	3.665	***	0.254	Yes

The model was tested for path, and the results are shown in Table 3. When the absolute value of the critical ratio C.R is greater than 1.96 and the P value is less than 0.05, it can be considered that the regression coefficient of this hypothesis path has passed the significance test Sürücü, et al. [32]. Subjective norms have a significant positive impact on sports consumption intention ($\beta = 0.263$, $p < 0.001$). This result supports the core hypothesis of TPB theory that social norms affect intentions and verifies H1. Attitudes also show a significant positive impact on sports consumption intentions ($\beta = 0.315$, $p < 0.001$). This path is highly stable in TPB theory. The results of this study are consistent with

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ISSN: 2576-8484
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existing studies and verify H2. Digital platform usage behavior has a significant positive impact on consumption intention (β = 0.265, p < 0.001). This result supports H3 and confirms the importance of digital media in the process of behavior formation. The path coefficient of consumption intention on consumption behavior is β = 0.470 (p < 0.001), which is the largest coefficient among all paths, indicating that consumption intention is the strongest predictor of actual behavior. This is consistent with the main path of the TPB model, verifying H4. The direct effect of digital platform use on sports consumption behavior is not significant (β = -0.058, p = 0.447), so H5 is not supported. Attitude has a positive and significant impact on consumption behavior (β = 0.198, p = 0.008), which supports H6. The path of subjective norms on consumption behavior is also significant (β = 0.254, p < 0.001), which supports H7.

4.6. Mediation Effect Test

To further explore the mediating role of sports consumption intention in the relationship between digital platform use, subjective norms and attitudes on sports consumption behavior, this study used the Bootstrap method to test the mediation effect, set the sampling number to 2000 times, and the confidence level to 95%. The analysis used the bias-corrected and percentile double reset confidence interval method to determine whether the mediation effect was significant. When the 95% confidence interval does not contain zero and the p-value is less than 0.05, the mediation effect is considered significan [33]. In addition, Bootstrap recommends that the number of repeated samplings be 2000 or more to improve the stability and accuracy of the estimate [34]. Although this study uses the Bootstrap confidence interval as the main basis, the Z value>1.96 is also used as an auxiliary judgment standard [35]. The results of the mediation effect test are shown in Table 4

Table 4.
Mediating effect test.

Path relationship	Point estimate	Product of cofficient		bootstrapping 2000 times 95% CI					P
				bias-corrected			Percentile		
		SE	Z	Lower	Upper	P	Lower	Upper	
DP→CI→CB	0.125	0.055	2.273	0.035	0.259	0.009	0.021	0.237	0.021
SN→CI→CB	0.124	0.056	2.214	0.037	0.303	0.003	0.031	0.296	0.001
AT→CI→CB	0.148	0.062	2.387	0.054	0.264	0.000	0.051	0.253	0.004

As shown in Table 4, the mediating effect of the path of digital platform usage → consumption intention → sports consumption behavior is 0.125, 95% CI [0.035, 0.259], and the result is significant; the mediating effect of the path of subjective norm → consumption intention → sports consumption behavior is 0.124, CI [0.037, 0.303], and the result is significant; the mediating effect of the path of attitude → consumption intention → sports consumption behavior is 0.148, CI [0.054, 0.264], and the result is significant.

5. Research Conclusions and Discussion

5.1. Research Conclusions

Based on the theory of planned behavior Ajzen [4] this paper takes the sports consumption behavior of the general public in the context of digital platforms as the research object. Through the questionnaire survey method, 318 valid sample data were obtained, and a structural equation model (SEM) was constructed to systematically explain the influence path and mediating mechanism of subjective norms, attitudes and digital platform use on sports consumption intention and consumption behavior. The study clarified the relationship logic between individual psychological variables and media behavior variables, and revealed the internal formation mechanism of sports consumption behavior in the digital environment. The research conclusions of this article are as follows:

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 215-229, 2025
DOI: 10.55214/25768484.v9i4.5956

(1) Subjective norms, attitudes and digital platform use all have a significant positive impact on sports consumption intention, and attitude has the most significant impact on consumption intention, indicating that individual value judgments and positive evaluations are important sources of sports consumption motivation; at the same time, the behavioral norms of social groups will also significantly enhance the willingness of individuals to participate in sports consumption.

(2) Consumption intention is the core variable for predicting sports consumption behavior and has a significant mediating effect. Among them, digital platform use has a complete mediating effect on consumption behavior through consumption intention, while subjective norms and attitudes have a partial mediating effect, indicating that some behaviors may bypass the intention stage and occur directly.

(3) The direct path of digital platform use on sports consumption behavior is not significant, suggesting that digital platforms indirectly affect sports consumption behavior by enhancing users' psychological cognition and willingness to participate, rather than directly driving users to generate consumption behavior. This conclusion emphasizes the importance of motivational stimulation mechanisms in the application of digital platforms.

In addition, several inspiring findings emerged during the research process. It was originally assumed that the use of digital platforms has a direct impact on sports consumption behavior, but the empirical results did not support this. This reflects to a certain extent that although digital platforms have media advantages, they still need to rely on stronger cognitive and motivational conversion mechanisms to promote specific consumption behaviors. This unexpected finding shows that although digital technology tools provide convenience for consumption, their mode of action is more indirect and needs to rely on individual subjective consciousness and platform incentive mechanisms to work together. In summary, this study not only verifies the applicability of TPB theory in the field of digital sports consumption, but also expands the theory's tolerance of external media variables, and has important theoretical and practical value for further understanding the psychological mechanism and platform mechanism of individual behavior.

5.2. Theoretical Contribution and Practical Enlightenment

5.2.1. Theoretical Contribution

First, this study responds to the proposal of scholars such as Ajzen [4] that the impact of digital media variables on the psychological mechanism of consumer behavior needs to be further explored at the theoretical level, and verifies that the use of digital platforms has a significant positive impact on sports consumption intention. This result is consistent with the research of Hagger, et al. [7] and Kim [36]. However, Hagger mainly studied adolescent students, and the results lack a certain degree of universality; while Kim conducted research on sports fans in North America, and his sample objects have geographical limitations. Unlike previous studies, the sample objects of this study are Chinese mass users, which are highly representative. The study focuses on the role of digital platform use, subjective norms and attitudes in the TPB structure, and finds that digital platforms have a significant effect on consumer intention. Therefore, this study further enriches the empirical research of TPB theory in the digital media environment.

Second, based on the theory of planned behavior, this study confirms another important mediating path of digital platform use on sports consumption behavior from a mechanism perspective. According to TPB theory, behavioral intention is a mediating variable between attitude, subjective norm and behavior [37]. The results of this study also show that digital platform use has a complete mediating effect between platform behavior and sports consumption behavior. This result further verifies the multi-path structure of TPB theory in digital contexts. However, previous studies have mostly cut in from the perspective of technology acceptance or social influence, and found the transmission mechanism between motivation and behavior, but ignored the understanding of the role of media variables on behavior from the perspective of behavioral intention. Compared with previous sports consumption behavior research, this study responds to Hamari and Koivisto [38] 's call for

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 215-229, 2025
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"strengthening the mechanism exploration of the platform behavior on the intention conversion path", expands the digital platform research from the tool perspective to the behavioral mechanism perspective, and verifies that platform use behavior is an important antecedent variable that promotes the formation of intention. Therefore, this study provides a new explanatory framework for understanding the role of media behavior on consumer behavior, deepens the discussion of the "media-psychology-behavior" chain mechanism, and broadens the scope of application of TPB theory, which is a good supplement to existing research results.

Finally, this study verified the mediating effect of consumption intention on sports consumption behavior. When users have a high consumption intention, the impact of digital platform use on behavior is significant; on the contrary, the impact of platform use on the behavior of users without intention is not significant. This result is similar to the research results of Yadav and Pathak [39] indicating that intention is an important source of sports consumption and significantly enhances the conduction effect of platform behavior on consumer behavior. However, previous studies focused on analyzing the direct driving role of the platform and ignored the mediating effect path of intention. This study further confirmed the decisive influence of intention on behavior, which to a certain extent improved previous research and helped the academic community to more comprehensively understand the mechanism of action between platform use and consumer behavior. In addition, this study also found that subjective norms and attitudes have both direct and indirect effects on consumer behavior. This research result clarified the boundary conditions of the mechanism of action between multiple paths and further enriched the relevant research on the TPB structural model.

5.2.2. Practical Implications

First, this study found that attitudes, subjective norms, and the use of digital platforms have a significant positive effect on sports consumption intentions, and can directly or indirectly affect sports consumption behaviors. This helps inspire relevant policymakers, sports marketers, and platform operators to pay more attention to users' emotional attitudes and cognitive responses to sports consumption. For example, when users first come into contact with sports products or activities, their positive cognitive evaluations should be strengthened through emotional motivation, brand building, and functional display, thereby enhancing behavioral intentions and participation [40].

Second, given the structural model findings of this study—consumption intention plays a full mediating role between digital platform use and consumption behavior—the platform's strategic focus should shift from "promoting direct consumption" to "stimulating participation intentions." In other words, platform operators should not only rely on pushing products or providing purchase entrances, but should also pay more attention to community interaction, content incentives, user perception, etc., to promote intention generation by enhancing user identity and social value, and then achieve behavioral conversion [41].

Third, this study also found that subjective norms and attitudes have a direct influence on sports consumption behavior in addition to indirect effects. In situations with strong sociality or high emotional involvement, such as team sports, trendy events, and campus social backgrounds, social group opinions and individual attitudes may directly drive behavior. Therefore, sports platforms and marketers should fully tap the influence value of opinion leaders, KOLs, and community culture, and build a positive consumption atmosphere to achieve full-chain intervention from cognitive guidance to behavioral conversion [39].

5.3. Research Deficiencies and Prospects

This study follows the previous research design and adopts a questionnaire survey method, but it cannot avoid the possible risk of sample bias to a certain extent. For example, although this study combined online and offline methods to obtain a total of 318 valid samples, the survey subjects were mainly concentrated in the general public in a specific region, and may not fully cover the sports consumer groups of different ages, educational backgrounds and cultural preferences. Therefore, future

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 215-229, 2025
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studies can use stratified sampling or multi-stage sampling methods for research design to conduct a more extensive measurement of platform use and behavior variables in order to better explore the relationship between digital platforms and sports consumption behavior.

In terms of analytical technology, this study uses structural equation modeling (SEM) for confirmatory analysis, which may lead to interpretation bias due to model hypothesis dependence or variable structure preset. Future research can consider introducing mixed methods or multi-level modeling to integrate qualitative interviews and quantitative data, so as to better understand the psychological motivations and social mechanisms behind user behavior.

The general public users from mainland China may have differences in culture or media usage habits in their perception of digital platform use and sports consumption behavior. Based on this, future research can further expand the sample size and introduce cross-cultural or cross-platform comparative studies to test the universality and differences of the TPB theoretical model in different cultural contexts.

In terms of empirical path construction, this study focuses on subjective norms, attitudes, platform use and intention variables, and fails to include more external variables, such as emotional state, platform trust, content type preference, etc. Future research can expand the variable system and further refine the user behavior path and mechanism from multiple dimensions such as content characteristics, user characteristics and platform characteristics.

Cross-sectional data only reflects the user's psychological and behavioral state at a specific time point, and it is difficult to reveal the dynamic evolution trend of user behavior changes. It is recommended that future research adopt a longitudinal data tracking design to capture the causal path between platform use behavior, consumption intention and sports consumption behavior over time.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

Acknowledgement:

The author would like to express sincere gratitude to Professor Rozita, the supervisor of this research, for the invaluable guidance and continuous support throughout the development of this paper.

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Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 9, No. 4: 215-229, 2025
DOI: 10.55214/25768484.v9i4.5956