

RESEARCH ON SPORTS VIDEO USE BEHAVIOR OF COLLEGE STUDENTS--BASED ON TECHNOLOGY ACCEPTANCE MODEL

CHUNG-CHENG HSIEH^a, BANG NGUYEN^b and KEMO BADIANE^c

^aPh.D. student, Department of Business Administration, Asia University, 500, Lioufeng Rd., Wufeng, Taichung 41354, Taiwan.

^bPh.D. student, Department of Sport Management, National Taiwan University of Sport, Taichung, Taiwan / Department of Facilities Management, Ton Duc Thang University, Ho Chi Minh City, Vietnam.

^cAssociate Professor Nanfang College - Guangzhou, 882, Wenquan Avenue, Guangzhou, China.

Abstract

With the rapid development of Information Technology, new media has gradually become an effective communication channel. Sports video has been developed through the Internet, and mobile client has become one of the options for people to exercise. It is of great significance to study university students' sports video usage behavior from the perspective of Technology Acceptance Model (TAM). The purpose of this study is to predict the behavior of Lingnan Normal University (LNU) students watching sports videos, and to provide suggestions for the key strategies for further quality improvement of the sports video industry. In this study, 420 questionnaires were distributed to the students through intentional sampling methods, and 356 questionnaires were recovered and valid, with a recovery rate of 84.8%. The research results show that: (1) The usage behavior of sports videos of senior college students is higher than that of students in other grades; (2) The more times of watching sports videos per week, the higher the usage behavior compared to those with low viewing times; (3) University students who watch sports videos three or four times a week are more likely to watch and use sports videos; (4) Those who exercise three or four times a week are more inclined to watch and use sports videos; (5) Those who spend less than 40 minutes are more inclined to watch and use sports videos; (6) Perceived usefulness can effectively predict Behavioral Attitude (BA), and BA can effectively predict Usage Intention (UI). The research conclusions provide reference for the future development direction of the sports video industry.

Keywords: Sports video; Usage behavior (UB); Technology Acceptance Model (TAM); "Internet + Sports"

INTRODUCTION

In recent years, with the rapid development of information technology, the "Internet + Sports" has subverted the traditional industry through the application of Internet technology. With the increasing popularity of live streaming platforms, such as Douyin, YY, Huoshan, and Weibo, traditional physical exercise has shifted to video, and sports videos are increasingly popular among young people (Krigel et al., 2023; Li et al., 2023). Through sports videos, one can not only improve body shape, enhance physical function, learn sports techniques, and improve health levels, but also enjoy oneself and satisfy both physical and spiritual needs sports videos. Furthermore, they can not only improve body shape, enhance physical function, learn sports technology, improve health levels, but also enjoy the body and mind, satisfying both physical and psychological needs (Li, 2016). By 2020, the number of people who regularly participate in sports in China reached 435 million, and the size of the sports industry will reach 3 trillion yuan, of which the sports service industry will account for 55%, or about 1.65 trillion yuan (Ma, 2019). With the rapid development of the sports industry, the concept of fitness has become more and more widely known (González-Serrano et al., 2023). The size of the market should effectively meet the increasing demand for fitness and exercise. With the rapid development of video, people have formed a new convenient and healthy lifestyle. As new media gradually become

effective communication channels, sports videos are developed through the Internet and mobile clients, and watching sports video has become one of the choices for people to exercise. The development of the sports video industry is an unstoppable trend. This study focuses on the background of "Internet + Sports" and uses the Technology Acceptance Model (TAM) as a theoretical framework and predicts the behavior of watching sports videos by analyzing the current situation of the student's sports video Usage Behavior (UB).

With the rapid development of information technology, "Internet + sports" has resolved the shortcomings of traditional sports, and making it become a new trend in the field of digital sports. As a hot research topic, there are issues closely related to sports training, live sports video broadcast, event communication and sports video technology. In sports training instruction, systematic video and image information analysis has high accuracy and comprehensiveness (Wang, 2019); with the increasing number of users of web-based live sports video, new media platforms are competing to join the web-based live sports video broadcast (Wang, 2017). Based on the rapid development of video analysis technology during the shooting of sports, technical actions have significant features (Ye, 2019). Research on sports video is mostly focused on the analysis and research of sports video during training, video teaching, and live broadcast of games, but there is a lack of research on the analysis of sports video UB for students. In addition to the problems of poor content quality and homogenization, multiple development models have not yet been fully developed, and research on student viewing of sports videos UB still needs to be explored. Moreover, over the past 20 years, the TAM has been considered by most scholars as a concise and powerful theory for predicting and explaining various information technologies in user behavior studies. This research paper is based on the background of "Internet + sports", using the TAM as a theoretical framework, starting from the analysis of the behavior of students viewing sports videos, and discussing its impact on UB and the sports video industry. The purpose of this paper is to use the TAM as a theoretical framework to predict and obtain the UB research of student sports video, and to provide suggestions for the key strategies for further quality improvement of the sports video industry. Based on the purpose of this study, the main research questions of this study are as follows: Does Perceived Usefulness (PU) affect Behavioral Attitude (BA)? Does Perceived Ease of Use (PEOU) affect PU? Does Perceived Usefulness (PU) affect Intention to use IU? Does BA affect IU? Is there any significant difference in the acceptance model of watching sports video technology among students from different demographic backgrounds?

PU reflects the degree to which an individual believes that operating a specific system improves her/his work performance and is an important condition for determining the technology acceptance model (Zhang, & Zhang, 2015). It is the most important determinant in the TAM and directly affects sports video viewing behavior.

PEOU reflects the degree to which individuals find it easy to operate a specific system and is another factor determining the TAM (Zhang, & Zhang, 2015). In the TAM, PEOU is one of the important conditions for users to accept information technology behavior. PEOU influences PU, either directly or indirectly, which in turn influences the student's sports video UB. BA refers to an individual's perception of the value of a certain behavior and the individual's emotional response to whether s/he is willing to adopt that behavior (Leng, & Tang, 2019). Attitude is a person's tendency to make value judgments about a particular thing. IU is the tendency of an individual wanting to take a particular behavior. It is the tendency to indicate that a person is willing to use the information system (Ma, 2012). In

this study, the use of sports videos involves specific activities, such as watching sports videos, including fitness, sharing with others, and learning relevant knowledge and skills. UB is the actual usage behavior of individuals (Zhou, 2014)). This research studies students' watching sports videos UB, including watching sports videos for fitness, sharing, learning and other behaviors. This study is divided into five chapters. Besides the introduction in the first chapter, chapter two focuses on literature review highlighting the integrated control of sports video information for sports training and the importance of TAM. Chapter three explains the research methodology which involved research subjects, research instruments, analysis of pretest questionnaire and data analysis method. Chapter four analyzes the findings of the study. Finally, chapter five concludes the study and presents the limitations of the study, and recommendations for future studies.

LITERATURE REVIEW

Sports Video Research

According to the related issues of sports video research in recent years, for example, Zhang and Yuan (2013) proposed to construct a technical video image processing system for excellent sports players to study and narrate sports events by using sports video image processing technology to provide scientific services to relevant researchers, managers, coaches and players, etc.

Li Fang pointed out that the dissemination of large-scale sports video shows the remarkable characteristics of all media, multiple scenes, and multiple terminals in the Internet era. The future sports video dissemination is based on fragmented information, multi-terminal integration and multi-platform dissemination instead of single-line dissemination based on channels and columns (Li, 2016); Wu and Xu (2016) proposed that the broadcasting mode of live sports video over the Internet is a broadcasting mode that uses streaming media technology to combine multiple elements, such as images, sounds, and texts, and is transmitted from the Internet platform to offline audiences online. The mainstream method of online sports video transmission is the Internet (Wu., & Xu, 2016). Che (2017) proposed that sports training is gradually scientific and intelligent with the continuous development of image and video processing technology. The sports video frame sequence analysis method is used to collect and recover information on the action features in technical training to correct inaccurate sports training actions and realize real-time monitoring and information communication of sports video in sports training (Che, 2017). Chen (2018) proposed that an embedded control core is used to carry out the system and provide the information to the audience that the system design and development using embedded control cores can complete the communication and real-time monitoring of sports video information. The integrated control of sports video information for sports training can provide effective and accurate guidance for sports training based on the IoT environment. Wang (2019) proposed that the key frame of motion video and image information can be effectively used in sports training instruction.

The above research shows that the research on sports video by relevant scholars and practitioners has been widely involved in the integration with related fields, such as training and teaching, live sports video broadcasting, event communication, image processing and marketing of sports video industry. The combination of Internet and sports has solved the shortcomings of traditional sports, and the rapid development of sports video has not only

provided mobile users with a new mode of sports video, but also provided new means of communication in various fields. Sports video is a form of gathering and disseminating sports-related events on internet platforms and represents an important part of people's lives.

A Study of Technology Acceptance Models

The TAM is a model proposed by Davis when using rational behavior theory to study user information system acceptance (**Figure 1**). Two of the main determinants are PU and PEOU. The former is an indication of the degree to which an individual believes that using a specific system will improve his or her work performance, while the latter reflects how easy it is for an individual to use a specific system. The model has been studied by different scholars.

The researchers suggested that the definition of UB in terms of frequency and duration is limited, so the meaning of UB should be enhanced, such as user adoption, learning, and reconstruction of the information acceptance system by users can be considered as UB (Ma, 2012). Bian (2012) proposed several development trends of the TAM including crossing disciplines, focusing on special groups of people, combining new theories, and shifting emphasis. Zhang and Li (2014) put forward that in order to promote teachers' active use of network teaching, it is necessary to improve the value intention of network teaching behaviors. This is a good example for the use of sports videos in the context of this research. Zhang (2017) proposed three trends of introducing new theories and external variables, applying new fields and targeting special objects as the TAM. Zhu and Yuan (2018) put forward that the important theory of TAM is widely used in the fields of information acceptance system, intelligence science, library science and enterprise management. As a theoretical framework, the TAM has obvious advantages and is widely recognized and used by scholars for its validity, simplicity, and power of explanation. In monitoring and analyzing the behavior of information technology users, the use of TAM theory is the most common and influential. It is important to study university students' sports video UB from the perspective of TAM. This study on sports video UB will examine the relationship between PU, PEOU, BA, IU, and UB.

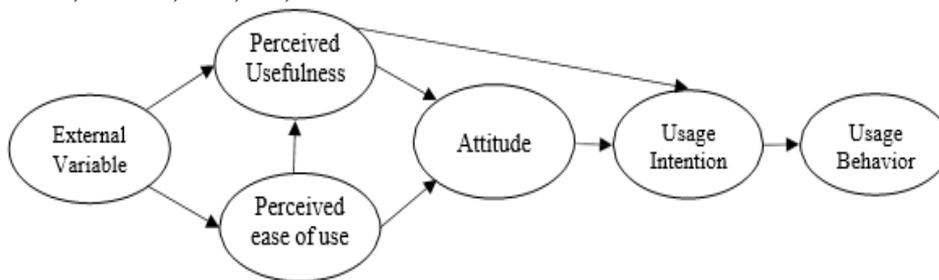


Figure 1 Technology Acceptance Model

RESEARCH METHODS

Research Subjects

The study was conducted on students watching sports videos at LNU using a systematic random sampling method. Students from 15 colleges were selected for investigation, including The School of Communication and Media (SCM), The School of Law and Political Science (SLPS), The School of Foreign Languages (SFL), The School of Educational Sciences (SES), The School of Information Technology (SIT), The School of

Mathematics and Statistics (SMS), The School of Chemistry and Chemical Engineering (SCCE), The School of Electrical and Mechanical Engineering (SEME), The School of Physical Science and Technology (SPST), The School of Business (SB), The School of Sport Sciences (SSS), The School of Arts and Design (SAD), The School of Music and Dance (SMD) and The School of Life Sciences and Technology (SLST). A total of 420 questionnaires were distributed and 356 valid questionnaires were returned.

Research Instruments

This questionnaire is divided into two parts. The first part is the technology acceptance model scale. According to the technology acceptance model theory there are five variables, which are PU, PEOU, UA, UI and UB, and compiled with reference to the application research of online sports video, short video and 5G-driven video technology (Wu & Xu, 2016; Du, 2019; Zang, 2019; & Song et al., 2019), among many others. The research uses a five-point Likert scale, each variable has four items, and each item consists of a series of statements. The second part is demographic information for study participants, including gender, grade, college, time, and frequency of viewing sports videos, time and frequency of sports, and channels for watching sports videos.

Analysis of Pre-test Questionnaire

Reliability Analysis

Reliability refers to the stability, reliability, and consistency of the results of measurement scales for each dimension. It can be viewed as the degree to which test results are affected by measurement errors (Yeh, 2007). In this study, a pretest was conducted after the initial test questions were written to demonstrate scientific rigor. A Cronbach's α coefficient of .7 or higher is considered acceptable, and a Cronbach's α coefficient of .8 or higher indicates high reliability.

Project Analysis

A sample pretest was constructed to determine the usability of the questionnaire items, and the official scale was established through deletion and adjustment. The total scores of the items were calculated and sorting them into 2 groups, and the highest and lowest scores of each item were examined. A significance of <.05 for the independent sample t-test (t-value) is considered significant. In this study, SPSS Statistics Version 24.0 was used to analyze the reliability and validity of the data as exhibited in **Table 1**. The results of the study showed that the t-values all reached significant levels and the overall Cronbach's α coefficient of the scale was .878, all of which exceeded .8, indicating that the reliability of the research questionnaire was high, and the items had a high consistency and could, therefore, be retained.

Table 1 Results of Reliability and Validity Analysis of the Questionnaire

Variables	Items	Total No. of items	T-value	Cronbach's α	No. of Items	Remarks
UA	UA1	.618	-18.123*	.851	4	Retained
	UA2	.726	-16.234*			
	UA3	.721	-16.641*			
	UA4	.621	-14.456*			
	PU1	.671	-15.343*			

PU	PU2	.643	-14.324*	.911	4	Retained
	PU3	.632	-15.342*			
	PU4	.697	-15.342*			
PEOU	PEOU 1	.681	-14.231*	.892	4	Retained
	PEOU 2	.712	-14.241*			
	PEOU 3	.664	-14.682*			
	PEOU 4	.724	-14.870*			
IU	UI 1	.692	-12.574*	.862	4	Retained
	UI 2	.662	-13.456*			
	UI 3	.732	-13.578*			
	UI 4	.742	-12.755*			
UB	UB 1	.729	-16.355*	.884	4	Retained
	UB 2	.687	-16.136*			
	UB 3	.782	-16.947*			
	UB 4	.772	-14.899*			

DATA ANALYSIS METHODS

In this study, we use statistical analysis of data obtained from the survey using SPSS 24.0 software.

Descriptive Statistics

This study collects and summarizes the data obtained from the survey samples to find out the intrinsic patterns of trends and dispersion trends in these data sets. A single factor analysis is conducted primarily with the help of statistics represented by a large amount of data, such as averages, percentages, etc. (Liu, 1993)

Regression Analysis

In this study, we mathematically processed various statistical data collected and determined the correlation between the dependent variables and some of the independent variables, so as to establish a regression equation with a strong correlation and extrapolate it to predict the subsequent analysis of changes in the dependent variables (Sheng, 2010).

Analysis of Results Background Information

Analysis of the Population

Variables	Group	Frequency	(%)
Gender	Male	122	34.3
	Female	234	65.7
Grade	Freshman	50	14.0
	Sophomore	79	22.2
	Juniors	99	27.8
	Seniors	128	36.0
	SCM	23	6.5
College	SLPS	34	9.6
	SFL	17	4.8
	SES	19	5.3
	SIT	17	4.8
	SMS	16	4.5
	SCCE	13	3.7
	SEME	13	3.7

	SPST	25	7.0
	SB	20	5.6
	SSS	112	31.5
	SAD	22	6.2
	SMD	12	3.4
	SLST	13	3.7
	Douyin	193	54.2
	Huǒ shān	9	2.5
	Miǎo pāi	31	8.7
Watch the campaign video channels	Kuài shǒu	35	9.8
	Weibo	157	44.1
	YY	4	1.1
	Meipai	12	3.4
	Xiǎo kā xiù	3	0.8
	Gōngzhòng hào	126	35.4
	Others	166	46.6
	After waking up in the morning	46	12.9
	During lunch break	44	12.4
Watch sports video time slots	Study time & on the way to office	133	37.4
	On the way to and from office	40	11.2

According to the results of the sample survey (see **Table 2**), the male and female subjects accounted for 34.3% and 65.7% of the total respectively, with a relatively large difference between male and female participants. The College of Physical Education accounted for 31.5% of the total sample. The educational level was mainly distributed among senior students, accounting for 36% of the total sample, which was associated with the relatively small number of senior courses, the internship period, and the relatively high level of discretionary time. The study found that students tend to watch and use sports videos at night before going to bed, on the way to study and whenever they can, accounting for 24.4%, 37.4% and 49.4% of the total respectively. The proportion of those who could watch sports videos at any time was the highest, while the proportion of those who could watch sports videos on the way to and from school was the lowest, about 11.2%. In addition, students tended to use platforms, such as Douyin, Weibo and other platforms, with the proportions of 54.2%, 44.1% and 46.6%, respectively, while the proportion of those who used Xiaoxiao was the lowest, about 0.8%. With the rapid development of multimedia technology, various sports videos softwares have emerged, and the number of channels for students to use sports video has greatly increased.

Analysis of the Factors Influencing Students' Sports Video UB

According to the survey results, the mean values of the variables influencing students to watch sports videos were, in descending order, "PEOU", "UB", "UI", "BA", and "PU", with mean values of 4.825, 3.978, 3.960, 3.923, and 3.794, respectively. This indicates that among the factors affecting sports video UB, the mean values of "PEOU", "UB", "BA", and "PU" were 4.825, 3.978, 3.960, 3.923, and 3.794, respectively. This shows that among the factors affecting sports video UB, "PEOU" has the greatest influence and "PU" has the lowest. As shown in **Table 3**, a summary of the influencing factors is presented, it is known from the

research results that “PEOU” has the greatest impact on students’ behavior of watching sports videos, indicating that students watch sports videos because they are easy to use. Secondly, "UB" has a greater impact on the behavior of students watching sports videos, showing that the actual behavior of students watching sports videos affects sports videos UB.

Table 3 Summary of Influencing Factors

Variables	Average value	Standard deviation
UA	3.923	0.837
PU	3.794	0.883
PEOU	4.825	0.789
UI	3.960	0.812
UB	3.978	0.794

If we analyze the items of the exercise video UB (as shown in **Table 4**), we found that the three items with the lowest average are "Watching sports videos can effectively help me improve my body shape when I exercise", "Watching sports videos can effectively help me improve my fitness level when I exercise", "I watch sports videos because they play smoothly". The results of the study showed that students do not focus on improving their body shape by watching sports videos and choosing to watch sports videos because of the smooth playback of sports videos, and nor do they emphasize on improving their body shape by watching sports videos. Moreover, the three items with the highest averages were "Watching sports videos can effectively help me improve my physical function when exercising", "Watching sports videos is convenient because of interactive channels", and "I'm willing to watch sports videos to learn motor skills". The results of the study indicate that students are willing to watch sports videos to learn motor skills to improve physical skills, focus on their own physical development, and they choose to use sports videos because of the timely and convenient interaction.

Table 4 Summary of the Means for Each Item

Items	Average value	Standard deviation
Q6	4.210	0.875
Q11	4.203	1.073
Q16	4.079	0.700
Q20	4.073	0.729
Q2	4.034	0.730
Q15	4.031	0.744
Q17	4.014	0.750
Q3	4.008	0.762
Q19	4.008	0.775
Q13	3.997	0.778
Q8	3.983	0.873
Q1	3.969	0.813
Q12	3.890	0.862
Q18	3.815	0.859
Q14	3.733	0.877
Q10	3.730	0.889

Q4	3.683	0.898
Q5	3.544	0.850
Q7	3.444	0.934
Q9	3.274	1.061

Analysis of the Relationship between Variables

Gender

The results of the t-test (see **Table 5**) show that in gender "BA" ($t=.125^*$, $p<.05$), "PU" ($t=.001^*$, $p<.05$), "PEOU" ($t=.487^*$, $p<.05$), "UI" ($t=.017$, $p<.05$), "UB" ($T=0.284$, $p<.05$), all reached significant differences. The average male in "BA", "PU", "PEOU", "UI" and "UB" is higher than that of female.

Table 5 Differential Analysis for Gender UB

Variable	Gender	No. of cases	Averagevalue	Standard deviation	t-value
UA	Male	122	2.074	.0365	.125*
	Contact	234	1.829	.0226	
PU	Male	122	2.109	.0321	.001*
	Contact	234	1.999	.0194	

Table 5 Differential Analysis for Gender UB (continued)

Variable	Gender	No. of cases	Averagevalue	Standard deviation	t-value
PEOU	Male	122	1.996	.0375	.487*
	Contact	234	1.810	.0237	
UI	Male	122	2.113	.0315	.017*
	Contact	234	1.970	.0204	
UB	Male	122	2.152	.0314	.284*
	Contact	234	1.954	.0223	
			*p < .05		

Grade

The study results for the four grades (see **Table 6**) showed that different grades in "BA" ($F=3.042$, $p<.05$), "PEOU" ($F=4.873$, $p<.05$), "UI" ($F=3.705$, $p<.05$) and "UB" ($F=6.033$, $p<.05$) all reached significant differences, while "PU" did not reach significant difference. After post hoc comparison of the five variables, except for "BA", the sports video of senior students "UB" was higher than that of sophomores; "PEOU", "UI", and "UB" were all sports video for senior and junior students, "UB" is higher than that of sophomore students. The results of this study indicated that the sports video "UB" of the senior students is higher than that of the junior students.

Table 6 Analysis of The Difference in Using Behavior Among the Grade

Variable items	Grade	Samples	Average value	Standard deviation	F-value	Schaffer's post hoc
UA	A	50	3.863	.754	3.042*	D>B
	B	79	3.750	.644		
	C	99	3.954	.664		
	D	128	4.029	.645		
PU	A	50	3.562	.843	.723	
	B	79	3.389	.754		
	C	99	3.567	.788		

	D	128	3.546	.867		
	A	50	3.615	.762		
PEOU	B	79	3.474	.608	4.873*	D, C>B
	C	99	3.792	.692		
	D	128	3.861	.719		
	A	50	3.860	.716		
UI	B	79	3.788	.572	3.705*	D, C>B
	C	99	4.007	.670		
	D	128	4.068	.624		
	A	50	3.880	.747		
UB	B	79	3.724	.681	6.033*	D, C>B
	C	99	4.073	.695		
	D	128	4.097	.626		
*p < .05						
A: Freshman, Sophomore, C : Junior, D : Senior						

Number of Sports Videos Watched per Week

According to the results of the study (see **Table 7**), the number of different weekly sports videos watched was higher for "BA" (F=14.547, p<.05), "PU" (F=4.974, p<.05), "PEOU" (F=3.456, p<.05), "UI" (F=12.402, p<.05), "UB" (F=18.386, p<.05), all reached significant differences. Post-hoc comparison of the variables revealed that "BA", "PU" and "PEOU" showed that the number of sports videos watched 5 times a week was higher than the number of sports videos watched once a week, while "BI" and "UB" are higher than those who watch sports videos 3 times and 4 times a week than 1 time, 2 times and more than 5 times.

Table 7 Analysis of Differences in the Number of Sports Videos Watched per Week

Variables	Items	Total No. of items	T-value	Cronbach's α	No. of Items	Remarks
UA	UA1	.618	-18.123*	.851	4	Retained
	UA2	.726	-16.234*			
	UA3	.721	-16.641*			
	UA4	.621	-14.456*			
PU	PU1	.671	-15.343*	.911	4	Retained
	PU2	.643	-14.324*			
	PU3	.632	-15.342*			
	PU4	.697	-15.342*			
PEOU	PEOU 1	.681	-14.231*	.892	4	Retained
	PEOU 2	.712	-14.241*			
	PEOU 3	.664	-14.682*			
	PEOU 4	.724	-14.870*			
IU	UI 1	.692	-12.574*	.862	4	Retained
	UI 2	.662	-13.456*			
	UI 3	.732	-13.578*			
	UI 4	.742	-12.755*			
UB	UB 1	.729	-16.355*	.884	4	Retained
	UB 2	.687	-16.136*			
	UB 3	.782	-16.947*			
	UB 4	.772	-14.899*			

Time Spent Watching Sports Videos per Week

According to the results of the study (see **Table 8**), the different viewing times of sports videos for "BA" (F=6.342, p<.05), "PEOU" (F=6.437, p<.05), "UI" (F=7.498, p<.05), "UB" (F=10.172, p<.05), and "UI" (F=7.498, p<.05), "UB" (F=10.172, p<.05) all reached significant differences, while "PU " did not reach significant difference.

Variables	Time/day	Samples	Average	Standard deviation	F-value	Scheffe's post-hoc
UA	1	77	3.743	.679	6.342*	C>A D, E>A, B
	2	82	3.725	.563		
	3	89	4.016	.687		
	4	44	4.113	.558		
	5 or more	64	4.132	.741		
PU	1	77	3.383	.827	1.893	
	2	82	3.378	.727		
	3	89	3.573	.754		
	4	44	3.676	.784		
	5 or more	64	3.621	.987		
PEOU	1	77	3.571	.744	6.437*	D, E>A, B
	2	82	3.503	.606		
	3	89	3.750	.672		
	4	44	3.954	.591		
	5 or more	64	3.976	.802		
UI	1	77	3.740	.685	7.498*	C,E>A,B
	2	82	3.801	.549		
	3	89	4.089	.564		
	4	44	3.999	.545		
	5 or more	64	4.222	.760		
UB	1	77	3.720	.705	10.172*	C,E>A,B
	2	82	3.765	.606		
	3	89	4.118	.581		
	4	44	4.068	.606		
	5 or more	64	4.300	.780		
*p < .05						

Number of Times of Exercise per Week

According to the results of the study (see **Table 9**), the different times of weekly exercise in "BA"(F=4.561, p<.05), "PU" (F=4.875, p<.05), "PEOU" (F=4.394, p<.05), "UI" (F=6.134, p<.05), "UB" (F=4.212, p<.05) all reached significant differences, while "PU" did not reach significant differences.

Table 9 Analysis of the Difference in Time per Exercise

Variables	Time/day	Samples	Average	Standard deviation	F value	Schaffer's post-hoc
UA	A	85	4.100	.669	4.561*	A, B>F
	B	103	3.970	.665		
	C	71	3.806	.627		
	D	21	4.083	.582		
	E	26	3.960	.565		

	F	50	3.595	.733		
	A	85	3.700	.810		
	B	103	3.618	.817		
PU	C	71	3.366	.780	4.875*	A, B, D>F
	D	21	3.733	.641		
	E	26	3.375	.613		
	F	50	3.115	.891		
	A	85	3.941	.634		
	B	103	3.793	.710		
PEOU	C	71	3.644	.671	4.394*	A, B>F
	D	21	3.690	.675		
	E	26	3.500	.741		
	F	50	3.430	.771		
	A	85	4.114	.583		
	B	103	4.099	.669		
UI	C	71	3.841	.503	6.134*	A,B>F
	D	21	4.047	.522		
	E	26	3.846	.659		
	F	50	3.600	.765		
	A	85	4.147	.606		
	B	103	4.048	.720		
UB	C	71	3.933	.670	4.212*	A, B>F
	D	21	4.071	.570		
	E	26	3.846	.583		
	F	50	3.635	.772		
*p < .05						
A: Below 20 min ; B : > 21-30 min ; C : ≥ 31- 40min ; D : ≥ 41 – 50 min ;						
E : ≥ 51-60 min ; F: Above 61min						

Regression Analysis

Prediction of PU and PEOU on BA for Watching Sports Video

The prediction of PU and PEOU on BA for students watching sports video is shown in **Table 10** below. After the regression analysis, the two variables PU and PEOU were both significant, with an overall explained variance of 60%, among which PU was the largest, indicating that PU had a greater predictive power on BA in watching sports videos.

Table 10 Regression Analysis of Sports Video UB Based on TAM

Model	Predictive variables order sequence	Multivariate correlation coefficient R	R-Squared	Adjusted R-Squared	F-value	Standard regression coefficient
1	PU	.809	.601	.598	118.415*	.713*
	PEOU					.561*
*P < .05 Dependent variable: UA						

Prediction of PU and BA on UI for Watching Sports Video

The prediction of PU and BA on UI for students watching sports videos is shown in **Table 11** below. After regression analysis, the input of two variables, BA is significant, while PU is not. The overall explained variance is 50%, among which BA is the largest, indicating

that BA has a greater predictive power on UI in watching sports videos.

Table 11 Regression Analysis of Sports Video UB Based on TAM

Model	Predictive variables order sequence	Multivariate correlation coefficient R	R-Squared	Adjusted R-squared	F value	Standard regression coefficient	
1	UA	.709	.502	.498	118.415*	.387*	
	PU					.026	
		*P < .05 Factor: UI					

CONCLUSION AND RECOMMENDATIONS

Conclusion

Based on the questionnaire survey and statistical analysis, this study puts forward discussion and analysis on the research results, and draws the following specific conclusions:

Analysis of the Current Situation Analysis of Student Sports Video UB

According to the research data, male students accounted for 34.3% of the total population, and female students accounted for 65.7%. Compared to the freshmen, sophomores, and junior students, the senior students had relatively fewer classes and are within the internship period, so they have relatively more sparetime to watch sports videos.

Students tend to watch and use sports videos before going to bed at night, on the way to study and work, and at any time. The percentages are 24.4%, 37.4%, and 49.4% respectively. Among them, the proportion of people who are likely to watch sports videos at any time is the highest, and those on the way to and from work accounted for the highest proportion.

The lowest proportion was 11.2%. Students tend to use Douyin, Weibo and other platforms, accounting for 54.2%, 44.1%, and 46.6% respectively. And the proportion of using Xiaokaxiu is the lowest at 0.8%. Today, with the rapid development of multimedia technology, various sports videos softwares have emerged, and the ways for students to use sports videos have greatly increased. Douyin is currently the most popular sports video software for students.

Analysis of the Relationship between Different Population Backgrounds and Variables

- (1) The mean scores for "BA", "PU", "PEOU", "UI" and "UB" are higher for males than females; students are willing to use sports videos to satisfy their own sports needs to improve their motor skills. The mean scores for "BA", "PU", "PEOU", "UI" and "UB" were higher for males than females; students were willing to satisfy their own sports needs by using sports videos and watching sports videos to improve their own motor skills.
- (2) Senior students have higher sports video UB than the freshmen, sophomores, and junior students.
- (3) Students who watched more sports videos per week had higher sports video UB than those who watched less.
- (4) Students who watched sports video for a moderate amount of time are more likely to watch sports videos than those who watched sports videos for a shorter amount of time and those who watched sports for a longer amount of time, while students who watched sports video for a shorter amount of time had higher sports video UB than those who

watched sports video for a longer amount of time.

- (5) Students who exercise on Wednesdays and Thursdays are more likely to watch and use sports videos.
- (6) Students who exercised for 30 to 40 minutes per session were more likely to watch and use sports videos.

Predictive Analysis of Student Sports Video UB Based on TAM

- (1) The prediction of PU and PEOU on BA in the case of students watching sports video, among them PU is the largest, indicating that PU has greater predictive power on BA in watching sports video, and PU can effectively predict BA.
- (2) The prediction of PU and BA on UI in the case of students watching sports video, where BA is the largest, indicates that BA has greater predictive power on UI in watching sports video, and BA can effectively predict UI.

Recommendations for Future Studies

Recommendations for Schools and Other Education Departments

The students in this case are willing to use sports videos to meet their physical needs so as to improve their motor skills. Physical education is an important component of school education and can effectively improve students' physical fitness (Wang et al., 2021).

First, it is important to develop students' interest in physical education and sports. When students become interested in sports subjects, they will consciously participate in sports activities (Blegur et al., 2023).

Second, improve the level of school sports facilities. To promote school sports, all departments of the Ministry of Education must do something (Montesinos et al., 2023).

Third, speed up the development of excellent physical education teachers, and cultivate teachers with sportsmanship and professional ethics who have a passion and desire for students and physical education teaching.

Fourth and finally, improve knowledge of physical education. It will be important to increase the awareness in physical education (Liu et al., 2023). If a physical education test does not raise students' interest in physical education and exercise, it will be difficult to change the overall physical condition.

Recommendations for Sports Media Industry and Sports Organizations

The current situation facing sports media is that opportunities and challenges coexist, and what it has to do is how to grasp the opportunities and meet the challenges.

Students tend to watch sports videos before going to bed at night, during study time, and work breaks, so platforms can target sports videos at relevant points in time.

The content level and quality of sports videos should be improved to make them more professional. At the same time, the content of the videos should be realistic and timely so as not to neglect the authenticity of the content due to excessive pursuit of communication effect.

In addition to the video content, the language expression ability of copywriting should also be emphasized. Besides, to maintain the attractiveness of sports videos to the audience, the content and style must be updated in time.

Raising one's public profile and generating interest in the field are also important investments, taking the professional level as the key to survival, creating awareness, and maximizing the advantages of professionalism.

Finally, it is necessary to combine online and offline operations methods to actively interact and engage the public.

References

1. Bian, P. (2012). A Review of Technology Acceptance Model Research. *Research on Library Science*. 4-8. DOI : <http://ir.las.ac.cn/handle/12502/5098>
2. Blegur, J., Rajagukguk, C. P. M., Sjoen, A. E., & Souisa, M. (2023). Innovation of analytical thinking skills instrument for throwing and catching game activities for elementary school students. *International Journal of Instruction*, 16 (1): 723-740.
3. Che, Y. (2017). Design and implementation of a sports video analysis system in sports training. *Modern Electronic Technology*. 78-81.
4. Chen, X. (2018). Research on the design and implementation of sports video analysis system in sports training. *Electronic Design Engineering*. 26 (15): 87-90.
5. Du, Y. Y. (2019). Research on the communication status and development countermeasures of short sports videos, *Journalist Cradle*. (08). www.qikan.com.cn.
6. González-Serrano, M. H., Dos Santos, M. A., Sendra-Garcia, J., & Calabuig, F. (2023). Sports entrepreneurship during COVID-19: Technology as an ally to maintain the competitiveness of small businesses. *Technological Forecasting and Social Change*, 187, 122256.
7. Kriegel, E. R., Lazarevic, B., Feifer, D. S., Athanasian, C. E., Chow, N., Sklar, J. P., & Milanaik, R. L. (2023). Youth and Augmented Reality. In *Springer Handbook of Augmented Reality*. 709-741. Springer, Cham.
8. Lian S., & Tang, P. F. (2019). A Study on Influencing Factors of Anchors' Behavior Intention from the Perspective of Theory of Planned Behavior: An Empirical Analysis Based on Network Anchors in Beijing. *Youth Research*, (03): 26-35.
9. Li, F. (2016). The trend of video communication of sports events on the Internet. *The Press*. (8): 134-137. DOI: CNKI: SUN: XWZX.0.2016-15-049
10. Li, X., & Xiao, X. (2023). An Empirical Research on The Application of Mobile Short Video in Higher Normal Undergraduate Colleges and Universities.
11. Liu, J. M., & Wang, T. X., GU, C. L., & J, Y. (1993). *Dictionary of publicity and public opinion*. Economic Daily, 03. Beijing City, China.
12. Ma, D. (2019). A review and prospect of the research on sports in China in the 40 years of reform and opening up.
13. *Journal of Shandong Sports University*, 35 (04): 13-18. <https://www.fx361.com/page/2019/1018/5841445.shtml>
14. Ma, X. L. (2012). The evolution of Technology Acceptance Model. *Jiangsu Commercial Forum*. (11) : 131-134.
15. Montesinos, C. H., Gil-Madrona, P., & Losada-Puente, L. (2023). Early childhood teacher professional development in physical education and its impact on preschooler motor development. In *Research Anthology on Early Childhood Development and School Transition in the Digital Era*. 1019-1035. IGI Global.
16. Sheng, J. (2010). *Probability theory and mathematical statistics*. Higher Education Press. Zhejiang, China.
17. Song M. Z., Zhang, P., Li, H. P., Liu, M. M., & Gao, P. (2009). Research on the application of 5G-driven video technology in the sports industry, *Communications World*. DOI: CNKI: SUN:JSTX.0.2019-

15-025

18. Wang, J. (2017). Research on content creation and development strategy of live NBA video streaming in tencentsports. Unpublished master thesis, Sichuan Normal University.
19. Wang, Y.Y. (2019). Design and development of a sports video analysis system for sports training. *Techniques of Automation and Applications*. 38(8): 152-155. DOI: CNKI: SUN: ZDHJ.0.2019-08-035
20. Wang, Y., Muthu, B., & Sivaparthipan, C. B. (2021). Internet of things driven physical activity recognition system for physical education. *Microprocessors and Microsystems*, 81, 103723.
21. Wu, C. X., & Xu, C. M. (2016). Current development and countermeasures of live online sports video broadcast industry in China. *Journal of Sports Adult Education*. 32(4): 34-36.
22. Yeh, W. (2019). Research and application of algorithms for motion detection of video techniques for holding motion. Unpublished doctoral dissertation, North China University of Technology.
23. Yeh, Y. H., & Cheng, C. C. (2007). New understanding of the concept of validity. *Chinese Journal of Clinical Physiology*. 15 (3): 45-48. DOI : 10.3969/j.issn.1005-3611.2007.03.016
24. Zang, L. (2019). Exploring the communication value and development suggestions of sports micro-video, *Journalism and Media Studies*, 162-164. DOI: 10.3969/j.issn.1007-8177.2019.01.064
25. Zhang, L. Y., & Zhang, R. (2015). Analysis of critical variable predictors for Technology Acceptance Model. *Journal of Information Resources Management*. (2)11-20.
26. Zhang, P. (2017). The Theoretical Evolution and Research Developments on Technology Acceptance Model. *Intelligence Science*. (7): 165-171.
27. Zhang, S., & Li, Y. F. (2014). A study on grid-based teaching behavior of high school teachers based on Technology Acceptance Model. *Journal of Distance Education*. 32 (3): 58-65. DOI: 10.3969/j.issn.1672-0008.2014.03.008
- Zhang, R. J., & Yuan, T. G. (2013). Basic architecture and technical terminology of the video image processing system for athletics projects. *Calder*. (3): 46-49.
28. Zhou, R. (2014). Research on user's information system usage behavior based on dual-factor perspective. Unpublished doctoral dissertation, Shandong University. DOI: 10.7666/d.Y2594959
29. Zhu, Z., & Yuan, Q. (2018). Technology Acceptance Model and Its application and prospect in the field of information system. *Intelligence Science*. (12): 168-176.