

Influencing Factors of Satisfaction with University Public Sports Services in the Context of Digital Transformation in China

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Abstract: This review systematically examines the proven empirical and theoretical studies on the determinants affecting student satisfaction of digitally enabled public sports services in Chinese universities in the framework of the Technology Acceptance Model (TAM). Based on a methodical search approach and narrative thematic synthesis, this analysis categorises evidence according to several dimensions, including information and system quality, service accessibility and personalisation, perceived usefulness (PU), perceived ease of use (PEOU), trust, risk perception, digital literacy, and user engagement. Results reveal that digital transformation can increase the pleasure of students only if the investments in standard infrastructure are directed towards accurate information, reliable platforms, ease of use, ease of booking and trust in data practices. This review integrates service quality conditions with the key acceptance beliefs and satisfaction outcomes of TAM, so establishing a specialised theoretical framework for understanding the satisfaction of digital sports services and giving practical development goals for Chinese university administrators.

Keywords: Digital Transformation; Student Satisfaction; Technology Acceptance Model; University Public Sports Services; Smart Campus

1. Introduction

The digital transformation of many public services including university athletic facilities is happening rapidly with the widespread acceptance of digital technologies [1]. In recent years, the digital transformation of higher education has been extensively studied in the literature [2], while research in the field of sports has increasingly focused on digitalization and intelligent service delivery [3]. In China, legislative measures like “Healthy China 2030” and the “14th Five-Year Plan” have promoted the application of digital technologies in education and sporting services [4]. Public institutions, universities, have a large and diverse student population and are increasingly called upon to enhance their sports offerings via online platforms, smart facilities, information management systems and mobile interfaces.

With the development of university public sports services, student satisfaction is an important indicator to evaluate the influence of services and the quality of campus life. Studies of leisure activities on the campus show that sports and cultural facilities increase student satisfaction [5]. However, traditional sports services based on fixed timetables, manual appointments and standardised processes, are increasingly not meeting students’ expectations around convenience, customisation and user-friendly digital access. So, several colleges have started to implement smart sports facilities, mobile reservation systems and digital management tools [1][6].

But the relationship between digital transformation and student satisfaction in this subject is not well understood. While there is a huge number of research on e-learning satisfaction and wider digital public services, university sports services have certain experiential, physical participation and social aspects that deserve dedicated academic attention. Moreover, the Chinese higher education setting should be taken into account, as the magnitude of universities, resources, institutional management capacities and student sports culture varies greatly.

This paper seeks to solve the research gaps mentioned above by investigating the factors influencing satisfaction with digital public sports services at Chinese universities. The study has three objectives: (1) to identify and categorise satisfaction-related factors mentioned in the literature; (2) to interpret these factors using the Technology Acceptance Model (TAM) particularly perceived usefulness and perceived ease of use; (3) to synthesise the research findings into a framework for providing references for future

research and service improvement at the university level.

2. Literature Review

The impact of digital transformation on satisfaction has been examined in higher education, public services, and sport service contexts, but the public sports service in universities is an emerging and relatively understudied topic.

2.1 Digital Transformation in Chinese Universities

Digital transformation in Chinese higher education [2] means integration of digital technologies into teaching, administration and student services. In the area of university sports services, this transformation comprises smart venue management systems, online reservation systems, mobile interfaces, facility information systems and data-supported service coordination [1][6][7].

Additional evidence from the sports industry demonstrates that digitalisation is becoming more associated with the modernisation of services, the efficiency of operations, and the sustainability of organisations [3][8]. These advances are relevant in Chinese universities since digital sports services integrate physical facilities with platform-mediated access, information transparency and the student user experience [1][5].

2.2 Theoretical Foundations

The Technology Acceptance Model (TAM), originally proposed by Davis [9], remains one of the leading frameworks for explaining users' acceptance of information technologies. TAM put forwards two basic beliefs: perceived usefulness (PU) and perceived ease of use (PEOU). Perceived usefulness is an extent to which a person believes that employing certain technology will enhance performance or outcomes. Perceived ease of use is defined as the extent to which an individual believes that the usage of the technology will involve minimal effort. Later study into technology acceptance further supports the influence of external variables such as system design, user training and organisational support in developing beliefs about technology use [10].

Other models include the Unified Theory of Acceptance and Use of Technology (UTAUT), the DeLone and McLean Information Systems Success Model and the SERVQUAL model of service quality. TAM is suitable for this evaluation as it offers a short theoretical way to link digital-service conditions and student satisfaction via perceived utility and perceived ease of use.

2.3 Satisfaction in Public Service Contexts

Public satisfaction with service delivery can be understood as a multidimensional evaluation involving service quality, perceived value, responsiveness, trust, and user experience. In digital public services, system quality, information quality, service responsiveness, and user-related factors such as digital literacy and trust are especially relevant to satisfaction [11].

3. Research Methodology

Given the heterogeneity of study designs, samples, measures, and service contexts, this review used a structured search strategy followed by narrative and thematic synthesis rather than meta-analysis.

3.1 Review Design

The study was conducted as a literature review based on the TAM of the factors impacting students' happiness with the university public sports services in China with digital technology. The review will use systematic search, bibliographic verification, eligibility screening and topic synthesis. The choice of TAM as the organising framework is because the constructs of perceived utility and perceived ease of use allow an easy classification of the technology related satisfaction elements in the digital service systems [9][10]. Thus, the study should be viewed as a focused TAM-guided literature review, rather than a full-fledged systematic review.

3.2 Data Sources and Search Strategy

Relevant literature was searched in CNKI, Web of Science, Scopus, and Google Scholar for publications from 2015 to 2025. Search terms were grouped into four concept blocks: university context, sports-service context, digital-transformation context, and satisfaction or service-quality outcomes. Search combinations included: "university sports services" AND "digital transformation" AND "student satisfaction"; "smart campus" AND "sports services" AND "China"; "public sports services" AND "digital platform" AND "satisfaction"; and Chinese equivalents of university sports services, digital transformation, smart sports, service quality, and student satisfaction. Reference lists of relevant articles were also screened to identify additional literature.

3.3 Inclusion and Exclusion Criteria

Studies were included when they met the following criteria: (1) they examined university sports services, campus recreational services, public sports services, smart sports venues, or digital fitness-service platforms relevant to students or university contexts; (2) they addressed digital technologies, information systems, mobile applications, smart venues, data-driven platforms, or related digital-transformation processes; (3) they measured or discussed satisfaction, service quality, perceived usefulness, perceived ease of use, trust, engagement, accessibility, or related user-experience outcomes; (4) they provided empirical findings or rigorous theoretical discussion; and (5) they were published as peer-reviewed journal articles, conference papers, theses, or credible academic reports within the target period.

Studies were rejected if they had a sole focus on competitive athletics, elite or professional sports training, non-digital physical education or sports performance without a clear link to digital service delivery or satisfaction. Sources were also omitted if bibliographic details were missing, publishing records could not be identified, or the source did not clearly support the review question.

3.4 Screening, Study Selection, and PRISMA-Style Flow

The three staged screening process was followed. First, titles and abstracts were checked for relevance to digital sports services, student satisfaction, and the Chinese higher-education or public-service context. Second, full texts and bibliographic records were assessed against the inclusion and exclusion criteria. Third, eligible sources were coded according to digital-service focus, sample/context, satisfaction-related variables, method, key findings, and TAM relevance. The verified screening flow used in this revised manuscript is summarized in Table 1.

Table 1. Screening summary for the verified evidence base

Screening step	Records	Outcome
Records identified	19	Database searching and reference-list checking (2015-2025).
Removed during verification	8	Incomplete, non-traceable, or out-of-scope records.
Assessed for eligibility	11	Traceable sources relevant to the review question.
Excluded after eligibility check	0	No additional exclusions after verification.
Included in synthesis	11	Verified evidence base for thematic synthesis and TAM interpretation.

3.5 Data Extraction and Quality Appraisal

For each included scholarly source, the following details were retrieved: author and year, context of the study, research strategy or type of publication, focus of the digital-service, proof of satisfaction, and relation to TAM dimensions. The quality appraisal was carried out using a transparent five-criterion checklist: (1) clarity of research aim, (2) relevance to digitally enabled sports or public service satisfaction, (3) adequacy of sample, source or context description, (4) clarity of analytical or conceptual method, and (5) strength of support for the stated conclusions. Each source was assessed as strong, moderate or contextual. Strong sources were utilised to support the primary claims, moderate sources were used sparingly to provide thematic interpretation, and contextual sources were used solely to frame the background. This appraisal was not intended to generate a quantitative risk-of-bias score, but to protect against weak or peripheral sources making large assertions.

3.6 Data Synthesis

We performed a theme synthesis. The extracted parameters were classified into 5 analytical categories: quality of information and system, accessibility and personalisation of service, perceived usefulness and perceived ease of use, trust and risk perception, and user competence and engagement. These categories were interpreted through TAM by distinguishing external variables, core TAM beliefs, moderating factors, mediating factors, satisfaction outcomes, and post-satisfaction behavioral outcomes such as continued use intention and positive word-of-mouth.

3.7 Reference Verification and Evidence Cleaning

A reference audit was conducted to strengthen the reliability of the evidence base. Sources were retained when complete bibliographic information, DOI information, publisher records, or other traceable publication details were available. Eight records were excluded because they could not be confirmed with sufficient confidence or contained incomplete bibliographic details. The final reference list contains only the verified sources used in the synthesis. (See table 2)

Table 2. Characteristics of verified sources included in the synthesis

Study	Context and design	Digital service focus	Use in synthesis	TAM role
Hao & Dai (2024) [1]	University sports-venue management	Smart sports venue management information system	Supports discussion of smart venue systems, booking, and digitalized service management.	External variable: system quality
Fernandez et al. (2023) [2]	Higher education institutions; multivocal literature review	Digital transformation initiatives in universities	Supports the higher-education digital transformation framing and implementation challenges.	Theoretical/background support
Lailag & Chen (2022) [3]	Sports industry and public health; conceptual/economic discussion	Digitization in sports industry	Provides broad background on digitalization in sports and public-health-related service development.	Contextual background
Tian et al. (2025) [4]	China; national fitness public-service satisfaction; empirical model	National fitness public services and satisfaction evaluation	Supports public-service satisfaction logic in China-specific sports contexts.	Satisfaction and perceived quality context
Celik & Ozcan (2015) [5]	University recreational sports; empirical satisfaction study	Campus recreational sports and cultural facilities	Shows that campus sports and cultural facilities are associated with student satisfaction.	Background satisfaction evidence
Halynska & Zhao (2024) [6]	Smart university gymnasium in China; management analysis	Smart gymnasium operation and management	Supports the relevance of smart facilities and management strategy in Chinese university sports contexts.	External variable: infrastructure
Zhang (2023) [7]	Smart-city stadiums and gymnasiums; intelligent service study	Digital stadium and gymnasium service mode	Supports intelligent venue services, access, and facility-management discussion.	Accessibility and infrastructure
Wang et al. (2024) [8]	Sports organizations; empirical assessment	Digital transformation and sustainability	Provides broader sports-sector evidence on digital transformation effects and organizational outcomes.	Background digital-transformation evidence
Davis (1989) [9]	Foundational TAM article	Technology acceptance theory	Defines perceived usefulness and perceived ease of use.	Core TAM framework
Igbaria et al. (1995) [10]	Technology-use determinants; SEM study	Microcomputer usage and external determinants	Supports the role of external variables in shaping technology-use beliefs.	External variables -> use beliefs

Alves et al. (2025) [11]	Digital public service quality;	Digital public service quality framework	Supports interpretation of information quality, and service quality in digital public services.	External service-quality factors
Study	Context and design	Digital service focus	Use in synthesis	TAM role
Garcia-Pinillos et al. (2025) [12]	EduSport project; sports/education platform user perception	Sports and academic e-learning platform	Gives evidence of user perceptions relevant to digital platforms connecting sport and education.	PU and PEOU background
Peng & Tang (2021) [13]	Chinese students; physical exercise and health education	Student physical exercise and health education pathways	Supports context-specific discussion of Chinese students and physical-activity behaviors.	Contextual background
Zhong et al. (2025) [14]	Chinese college students; empirical digital technology study	Digital technology use and sports consumption	Supports student engagement and digital participation in sports contexts.	Engagement/user-level context

4. Results: Thematic Synthesis of Influencing Factors

The validated literature shows that satisfaction with digitally enabled public sports services at the university level is affected by a variety of platform-level, service-level, user-level, and institutional factors. The synthesis does not consider digital transformation as a direct source of satisfaction, but shows that digital tools influence satisfaction through perceived usefulness, perceived ease of use, trust, accessibility and engagement with them.

4.1 Characteristics of the Evidence Base

The evidence base comprises validated sources, which support the overall framing of higher education digital transformation, smart sports venues, digital public-service quality, TAM, campus recreational-sport satisfaction, Chinese student physical-activity contexts, and sports-related digital platforms. The synthesis emphasises conceptual linkages and patterns of themes, rather than unproven effect-size assertions, given the removal of a number of previously used China-specific numerical claims with questionable sources.

4.2 Information and System Quality

System quality and information quality are the operational basis of satisfaction with digital sports services. Students are reluctant to give a good rating to a digital service if the facilities available are incorrectly stated, if the booking confirmation cannot be trusted, if the announcements are late or if the platform crashes at peak times. From TAM perspective, information quality and system quality are the external variables affecting perceived ease of use and perceived usefulness [9][11].

As for the system quality of university public sports services, it involves platform stability, response speed, dependable login and authentication, seamless payment or reservation features, and connection with campus processes. Information quality is defined by accurate venue availability, updated timetables, clear regulations, transparent cancellation policies, and fast notice of changes. Smart venue management literature [1], [6] confirms the importance of these system-level requirements for the provision of digital sports services.

4.3 Service Accessibility and Personalization

One of the most obvious benefits of digital transformation is access. Mobile booking, remote access, multi-channel service interfaces, and extended availability help alleviate the time and geographical constraints that are inherent in traditional sports-service delivery. Students are more likely to find digital services useful and convenient if they can use them to book facilities, check schedules, join events or get guidance without having to visit an office [4][14]. Further empirical validation is required to confirm the role of personalization in Chinese university public sports-service contexts.

Personalisation is a more sophisticated satisfaction factor. Digital systems are able to analyse user

profiles, activity history, fitness goals, and participation records to suggest facilities, programs, or exercise routines. However, given the verified evidence base does not contain enough empirical evidence on personalisation in China at the university level, this element is to be understood as a theoretically viable and practice relevant direction rather than a completely developed empirical conclusion.

4.4 Perceived Usefulness and Perceived Ease of Use

This review is restricted to the core TAM constructs of perceived usefulness and perceived ease of use. Perceived usefulness refers to the students' perception of the extent to which digital sports services can increase their access, efficiency, fitness outcomes, or overall service experience. Perceived ease of use is about how simple and intuitive the platform is and how little work it requires. The two constructs can have direct effects on satisfaction, whereas ease of use can have indirect effects on satisfaction through boosting perceived usefulness [9] [10].

In practice, students are more satisfied when digital sports services save time, provide useful feedback, minimise administrative barriers, increase planning of exercise and support health or fitness goals. But complicated navigation, too many steps to book, confusing directions, technological difficulties and insufficient help support can decrease satisfaction even while the service itself is potentially valuable.

4.5 Trust, Risk Perception, Digital Literacy, and Engagement

Trust and perceived risk serve as key limitations in digitalised sport services. As platforms gather personal information, data on health-related behaviour, payment records, and location or attendance data, students may be concerned about privacy, security, and misuse of information. A sophisticated technical platform might not bring happiness if students don't trust the system or the institution running it. The available literature indicates that trust and perceived risk are theoretically important, but more direct empirical evidence is needed in university sports-service settings.

Digital literacy also influences the satisfaction. Students with more digital skills may adapt rapidly to complicated platforms, but students with less experience may need training, simplified interfaces and responsive support. User engagement when students are actively engaging with the platform, receiving meaningful feedback, and engaging in social or gamified functions may also further reinforce satisfaction. These user-level difficulties tie digital sports-service studies into broader digital public-service quality issues [11][12].

5. Discussion & Conclusion

5.1 Interpretation through the TAM Framework

The synthesis is supportive of a TAM-oriented understanding of satisfaction with digital university public sports services. Digital infrastructure is not enough on its own. Its worth is contingent upon the extent to which students find the platform useful and easy to use. Hence, PU and PEOU are influenced by external variables including quality of system, quality of information, infrastructure, organisational support, accessibility and personalisation, and not as independent determinants of satisfaction. Figure 1 presents the TAM-oriented framework linking external service conditions, TAM acceptance beliefs, and satisfaction outcomes.

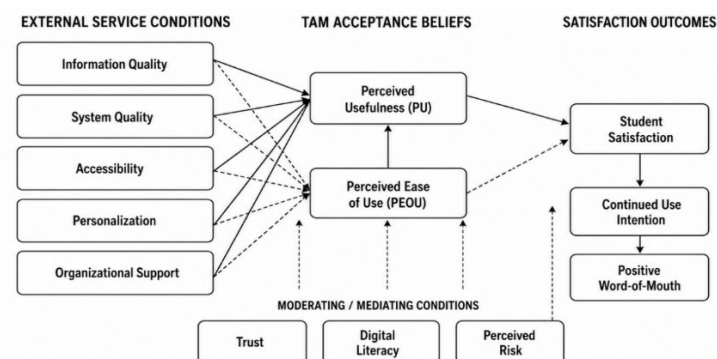


Figure 1. TAM Framework

5.2 Theoretical Implications

The review applies TAM to a specific public service context, namely university public sports services in a process of digital transformation. This context is different from regular information systems, as sports services integrate digital access with physical facilities, embodied activity, social contact and health-related outcomes. Therefore, TAM should be employed jointly with service-quality and public-service views, and not as a simply technological adoption model.

5.3 Practical Implications

The results would suggest a tiered process of improvement for university administrators. First, the universities should provide a fundamental reliability of system, an accurate knowledge of facilities and a smooth function of booking. Second, they should streamline the user interface and minimise superfluous operating procedures. Third, they need to improve accessibility through mobile access, real-time updates and multi-channel assistance. Fourth, only add personalisation after privacy protection and user permission processes are clear. Fifth, they should offer training, help desks and onboarding support for students with diverse digital literacy levels. Figure 2 summarizes practical improvement priorities according to their expected impact on satisfaction and implementation feasibility.

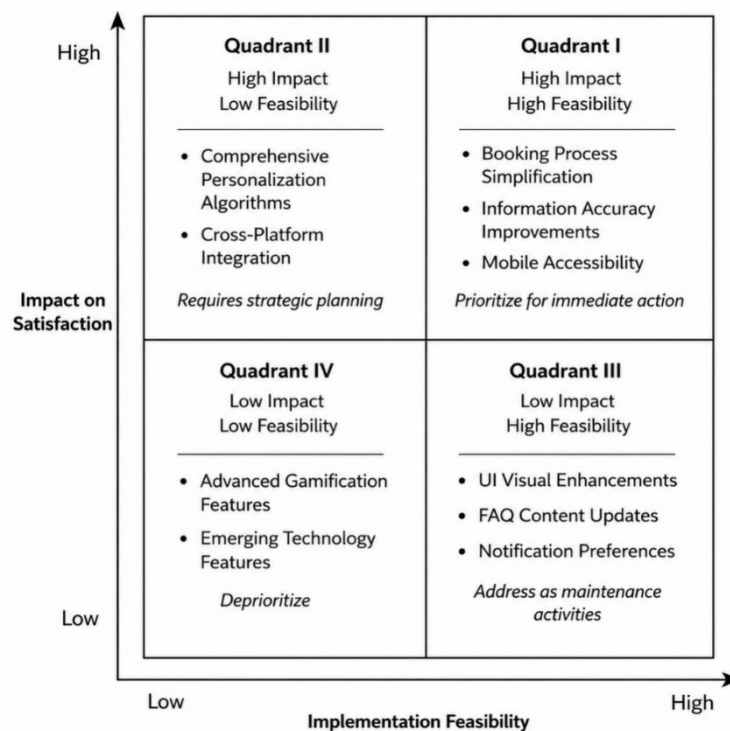


Figure 2. Strategic priority matrix for improving digital university public sports services. Source: Created by the authors from the thematic synthesis.

5.4 Research Gaps and Future Directions

There are several gaps. Current evidence suggests that personalization, trust, digital literacy, and engagement are relevant factors, but their effects require stronger longitudinal and intervention-based validation. First of all, a number of studies are cross-sectional in nature, making it difficult to understand how satisfaction evolves over time as students get used to the digital platforms. Second, evidence on equity and digital divide issues is still limited, especially for students coming from different socio-economic backgrounds, disciplines, locations and degrees of digital proficiency. Thirdly, additional empirical research is needed to compare different types of universities and different regions in China. Fourth, intervention studies are needed to assess if specific enhancements (e.g. booking simplification, real-time information updates, privacy notices, or personalised recommendations) genuinely increase satisfaction outcomes.

6. Conclusion

The results of this review show that students' satisfaction with digitally enabled university public sports services in China is related to the interaction of system quality, information quality, accessibility, personalisation, perceived usefulness, perceived ease of use, trust, digital literacy and engagement. The paper's most conceptual contribution is the integration of these aspects into a TAM-oriented framework. The assessment also notes that digital transformation should not be measured solely by infrastructure expenditure; it should be measured by whether students find digital sports services as valuable, easy to use, trustworthy, and accessible. Future study should expand the empirical evidence base with longitudinal studies, comparative university-level investigations, and intervention studies that test specific digital-service enhancements.

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