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Exploring the Factors Influencing the Adoption of Virtual Reality by Students in Higher Education Institutions: Evidence from China

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Abstract
Although higher education institutions have made certain progress in the application of virtual reality (VR) in education in recent years, the actual adoption rate among students is still not satisfactory, which affects its promotion effect. Previous studies mostly focused on the single perspective of the technology acceptance model, and rarely systematically explored the combined mechanism of individual and organizational factors, especially the empirical analysis of the mediating effect of use intention was relatively scarce. To explore the key paths influencing students' adoption of VR, this study, based on the Unified Theory of Technology Acceptance and Use (UTAUT), introduces technology-related individual factors to construct and verify the theoretical model. Taking 399 students from higher education institutions as samples, an empirical analysis was conducted using SPSS and AMOS. The results show that both technology-related individual factors and organizational factors have a significant positive impact on students' adoption of VR, and the intention to use plays a partial mediating role between the two types of factors and adoption. This research enriches the theoretical system in the field of educational technology adoption, provides practical paths for higher education to increase the adoption rate of VR, and also offers references for policymakers to optimize resource allocation.
Keywords: *Technology-related individual factors, Organizational factors, Intention to use, Adoption of VR, Virtual Reality*

1. INTRODUCTION

Although virtual reality (VR) demonstrates considerable potential in education, its large-scale implementation continues to face notable barriers. High equipment costs and ongoing maintenance expenses remain significant challenges, particularly for universities with limited budgets [1]. In addition, effective use of VR typically requires specialized technical training, and without adequate support the overall learning experience may be negatively affected [2]. Learners may also encounter physical discomfort, such as motion sickness, eye strain, and headaches—especially during extended use, which can discourage adoption [3]. Furthermore, improvements are still needed in areas such as content realism, interaction smoothness, and overall usability [4]. While immersive virtual environments are expected to stimulate positive emotions that enhance learning [5], some students remain doubtful, perceiving VR as unnecessary or irrelevant to their academic needs [6]. Thus, although VR is widely recognized as an innovative tool capable of enriching educational experiences and improving learning outcomes, its effective integration requires overcoming obstacles related to personal characteristics, institutional resources, and learner intention.

In the Chinese higher education context, VR adoption is still emerging and relatively limited [7], [8]. Examining students' intentions, perceived barriers, and actual adoption behaviors can provide valuable insights for guiding universities in promoting VR-based teaching. Such evidence can help institutions design more targeted implementation strategies and accelerate the spread of VR in education. Nantong, a key educational hub in Jiangsu Province, has achieved rapid progress in recent years and plays an important role in the region's social and economic development. The local government attaches importance to education and has actively promoted digital transformation, creating favorable conditions for VR integration [9]. Some higher education institutions in Nantong have begun applying VR in experimental and practice-oriented teaching. However, compared with more developed areas, the city's investment in VR remains limited, and student adoption levels are relatively low, which has slowed the overall development of VR education in the region [10].

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Technology-related Individual Factors (TRIF)

Technology-related individual factors are considered important determinants of technology adoption, as they reflect how individuals perceive innovations and evaluate their own abilities [11]. Previous studies emphasize that personal innovativeness and computer self-efficacy play a significant role in shaping adoption behaviors [12]. Personal innovativeness describes the extent to which individuals are willing to explore and try new digital tools [13-14]. People with higher innovativeness are usually more open to taking risks and are therefore more likely to adopt emerging technologies. Empirical studies have shown that this factor strongly promotes the adoption of virtual learning environments [15-18].

Computer self-efficacy refers to an individual's confidence in successfully using technology. Research has found that greater self-efficacy positively affects the acceptance of e-learning systems and increases engagement in virtual work [19]. Higher levels of self-efficacy also lead to more frequent and effective use of technologies, confirming its importance in explaining adoption behaviors [20]. Therefore, H1 is proposed as follows.

H1. There is a correlation between technology-related individual factors and students' adoption of VR.

2.2 Organizational Factors

According to the Unified Theory of Acceptance and Use of Technology (UTAUT), facilitating conditions refer to the technological and organizational resources that support users in adopting new technologies [21]. In VR education, organizational factors represent the environmental and resource-based conditions that assist learners in completing tasks and achieving learning goals [22]. Prior studies have shown that infrastructure, user-friendly systems, technical support, and training positively influence students' adoption of VR [23-24]. Both teachers and students recognize that sufficient facilities and support are essential for integrating VR into the teaching process [25]. Recent research also confirms that facilitating conditions promote the use of metaverse technologies in higher education, highlighting the importance of institutional investment in digital infrastructure and training [26-28]. Based on these findings, this study proposes H2.

H2. There is a correlation between organizational factors and students' adoption of VR.

2.3 Intention to use VR

2.3.1. Technology-related individual factors and intention to use VR

This study examined two technology-related individual factors, namely personal innovativeness and computer self-efficacy, in explaining students' intention to adopt VR. Prior research suggests that learners who are more open to new technologies are more likely to accept VR-based learning [29-30]. Personal innovativeness has been described as an individual's independent thinking and decision-making ability, and recent studies have incorporated it into technology adoption models, confirming its positive effect on users' behavioral intention [31-32]. Empirical evidence also shows that personal innovativeness directly influences students' willingness to adopt VR applications, including medical simulations [33].

Computer self-efficacy, which reflects confidence in acquiring and applying new skills, has also been identified as a significant predictor of technology adoption [34-35]. Recent findings further indicate that technical literacy, institutional support, and participation self-efficacy enhance users' willingness to engage in virtual environments [36]. Based on these findings, this study proposes H3.

H3. There is a correlation between technology-related individual factors and students' intention to use VR.

2.3.2. Organizational Factors and intention to use VR

In this study, organizational conditions are defined as external facilitating factors that provide environmental and resource-based support for learners to accomplish tasks [37]. When VR was initially introduced, not only equipment but also training and guidance were found to be essential in helping users overcome challenges and build confidence [38].

Based on UTAUT, facilitating conditions represent the objective resources and support needed for individuals to use information technologies, which have been shown to positively affect adoption intention [39-40]. Examples include technical support, reliable infrastructure, and instructional

assistance, which reduce difficulties and resistance in the learning process and improve students' perceived ease of use. Such support can foster engagement, enhance the sense of flow, and ultimately strengthen learners' willingness to continue using VR [41]. Therefore, this study proposes H4.
H4. There is a correlation between organizational factors and students' intention to use VR.

2.3.3. Intention to use VR and Adoption of VR
Intention to use is generally defined as an individual's willingness to apply a specific technology to accomplish tasks [42]. In the UTAUT framework, it is regarded as the most immediate predictor of actual usage behavior [43]. Prior studies have confirmed this relationship in contexts such as VR-based forklift training and metaverse learning platforms, where stronger intention directly leads to greater adoption [44-45]. Many scholars emphasize that the higher the intention to use a new technology, the more likely users are to engage in sustained learning and actual system use [46-47]. Conceptually, intention reflects a person's psychological tendency to perform a behavior and serves as a prerequisite for actual adoption [48]. In the case of VR, students' intention to use has been shown to play a decisive role in determining their adoption of VR learning systems [49]. Therefore, this study proposes H5.
H5. There is a correlation between students' intention to use VR and students' adoption of VR.

2.3.4. Mediating effect of intention to use VR
According to UTAUT, behavioral intention functions as a mediating variable linking influencing factors with actual usage behavior [50]. Prior studies in China found that perceived enjoyment, perceived usefulness, and subjective norms indirectly affect students' use of VR through intention [51]. Other research similarly confirmed that intention mediates the relationship between performance expectations, social influence, facilitating conditions, and actual behavior in technology adoption [52]. Based on these findings, this study proposes H6 and H7.
H6. Students' intention to use virtual reality mediates the relationship between technology-related individual factors and adoption of virtual reality.
H7. Students' intention to use virtual reality mediates the relationship between organizational factors and adoption of virtual reality.
The conceptual framework shows the above hypotheses as shown in Fig. 1.

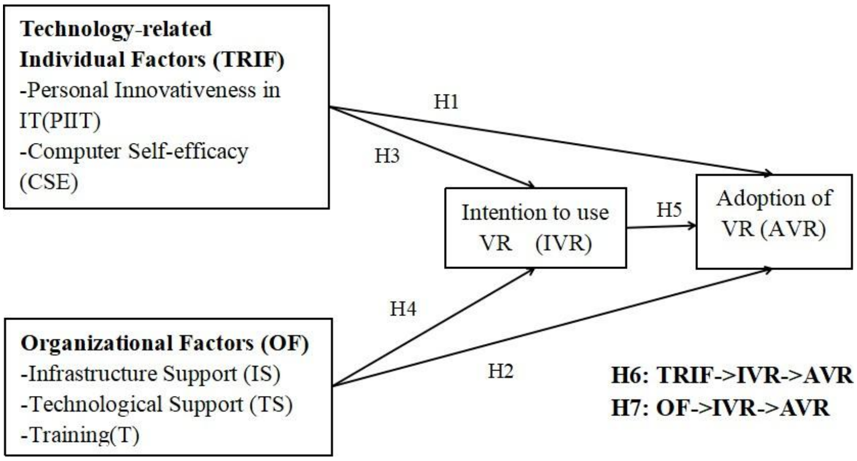

Fig. 1. Conceptual framework.

3. METHODOLOGY
3.1 Sample and data collection
The subjects of this study are all the students from the first year to the fourth year in the nine higher education institutions in Nantong City. Regarding the factors influencing college students' willingness and adoption of virtual reality (VR) in education, the most notable research is based on field investigations, many of which have chosen proportional stratified random sampling [53-54]. This study adopted the proportional stratified random sampling technique for sampling. According to the proportional stratified sampling technique, each school will independently select a certain number of individuals from each level in a certain proportion, and the individuals from each level will be combined into a sample. In this study, data was collected through a questionnaire survey. To ensure the quality and

scope of the questionnaire filling, the questionnaire will be distributed online through Wenjuanxing. Closed-ended questionnaires offer structured answer options, making them easy to quantify and statistically analyze [55]. This study was conducted anonymously and a total of 552 responses were collected, among which 399 were valid. Table 1 presents the demographic information of valid data.

Table 1 Profile of sample(n=399)

Attributes	Distribution	Frequency	%
Gender	Male	200	50.1
	Female	199	49.9
Higher Education Institutions	Nantong University	82	20.6
	Nantong Institute of Technology	69	17.3
	Nantong University Xinglin College	34	8.5
	Jiangsu Shipping College	35	8.8
	Jiangsu College of Engineering and Technology	41	10.3
	Jiangsu Vocational College of Business	36	9
	Nantong Vocational University	48	12
	Nantong College of Science And Technology	30	7.5
	Nantong Normal College	24	6
Grade	Freshman	120	30.1
	Sophomore	60	15
	Junior	176	44.1
	Senior	43	10.8
Major	Computer related major	274	68.7
	No-computer related major	125	31.3
VR Usage Experience	Experienced	205	51.4
	Inexperienced	194	48.6

3.2 Constructs measurement

This study encompasses four constructs, namely Technology-related Individual Factors (TRIF), Organizational Factors (OF), Intention to Use VR (IVR), and Adoption of VR (AVR). Among them, TRIF and OF are second-order constructs, each having subdimensions and corresponding items. The items included in the questionnaire designed for this study are all derived from existing literature and are measured using a five-point Likert scale. The number "1" represents "Strongly Disagree", and the number "5" indicates "Strongly Agree". Appendix 1 provides the questionnaire for this study.

Technology-related Individual Factors (TRIF) measure students' personal innovation ability and computer self-efficacy. TRIF is a secondary construct consisting of two dimensions: Personal Innovativeness in IT (PIIT) and Computer Self-efficacy (CSE). PIIT consists of four items, used to measure the extent to which students attempt new information technologies. CSE consists of four items, used to measure the computer ability of students to complete learning tasks with relevant VR devices.

Organizational Factors (OF) is another second-order construct used to measure the favorable objective factors provided by the organization. OF is measured through three first-order constructs: Infrastructure Support (IS), Technological Support (TS), and Training (T). IS is the first dimension, containing three items, used to measure the infrastructure conditions such as networks, software, and hardware. TS is the second dimension, containing four items, used to measure the technical support situation. T is the third dimension, containing three items, used to measure the training situation provided by the organization.

Intention to use VR (IVR) is a first-order construct used to measure students' intention to use VR. This study used 7 items to obtain responses regarding IVR.

Adoption of VR (AVR) is another first-order construct used to measure students' adoption of VR. This study used 6 items to obtain responses regarding AVR.

4. RESULTS

4.1 Common method variance

Common method variance (CMV) refers to the overlapping of variance between two variables because of the use of the same measurement tools, rather than representing the true relationship between the underlying constructs 0. CMV and Common method bias (CMB) are both terms related to method variance. CMV refers to the variance unrelated to the research construct caused by the use of the same method, while CMB is the biased result caused by CMV 0. To minimize the impact of CMB on the research results, this study questionnaire was conducted anonymously, and the respondents were informed of the reserved time for answering the questionnaire in advance, which helped to obtain real data. In addition, to test the issue of common method bias, the Harman single-factor test was adopted. As shown in Table 2, in the unrotated factor analysis, the first factor only explained 39.44% of the total variance, which was below the critical value of 50%, indicating that there was no significant common method bias in this study.

Secondly, this study also adopted the operation of adding a method factor (Common Latent Factor, CLF) in AMOS. This method introduces a latent method factor that loads onto all items and compares the changes in model fit to determine whether there is a significant CMV 0. As shown in Table 3, compared with the original model, after adding the latent method factor, the model fit did not show a significant change ($\Delta\chi^2/df$ = 0.049, ΔCFI = 0.004, ΔRMSEA = 0.002), thereby indicating that there was no significant CMV in the data.

Furthermore, this study also used the variance inflation factor (VIF) to detect the problem of multicollinearity
0. As shown in Table 4, all VIF values were less than 5, and Tolerance was greater than 0.1, indicating that there was no serious problem of multicollinearity in this study.

Table 2 Total Variance Explained (n=399).

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.226	39.440	39.440	12.226	39.440	39.440
2	3.065	9.887	49.327	3.065	9.887	49.327
3	2.557	8.247	57.574	2.557	8.247	57.574
4	1.898	6.123	63.697	1.898	6.123	63.697

Table 3 Common method bias test results (N=399).

Compared Models	ChiSq/df	CFI	RMSEA
Original Model	1.284	0.986	0.027
Model with CMV factor	1.235	0.99	0.025

Table 4 Results of VIF.

Constructs	Collinearity Statistics	
	Tolerance	VIF
Personal Innovativeness in IT(PIIT)	0.632	1.582
Computer Self-efficacy (CSE)	0.639	1.566
Infrastructure Support (IS)	0.561	1.782
Technological Support (TS)	0.588	1.702
Training(T)	0.583	1.716
Intention to use VR（IVR）	0.656	1.525

4.2 Measurement model

Before constructing the structural equation model (SEM), this study used SPSS 27 and AMOS 28 to evaluate and analyze the measurement model. This study used Cronbach's alpha and Composite Reliability (CR) to assess the reliability of the measurement tools, as shown in Table 5. The results indicated that the Cronbach's alpha and CR of all first-level and second-level constructs in this study were greater than 0.7, indicating that the internal consistency and reliability requirements for each latent variable were met 0.

This study evaluated convergent validity, structural validity, and discriminant validity in the measurement model. Average Variance Extracted (AVE) and factor loadings were used to assess convergent validity. As shown in Table 5, the AVE value of each construct was greater than 0.5, and the factor loading of each item was greater than 0.6. The results indicated that the convergent validity had been achieved 0. To test the structural validity, the study used AMOS 28 for confirmatory factor analysis (CFA), and the model fit (ChiSq/df = 1.284 < 3, CFI = 0.986 > 0.9, RESEA = 0.027 < 0.08) met the indicators, achieving structural validity. The study used the Fornell-Larcker criterion to measure the discriminant validity of the model, and from the results in Table 6, the square root of the AVE of a latent variable was greater than its correlation coefficient with other latent variables in the model, indicating that discriminant validity had been achieved 0.

Table 5 Reliability and validity.

Constructs		Items	Loading >0.6		Alpha >0.7		CR >0.7		AVE >0.5	
TRIF	PIIT	PIIT1	0.895	0.813	0.897	0.888	0.900	0.772	0.695	0.616
		PIIT2	0.698							
		PIIT3	0.811							
		PIIT4	0.913							
	CSE	CSE1	0.846	0.772	0.854		0.856		0.600	
		CSE2	0.787							
		CSE3	0.746							
		CSE4	0.712							
OF	IS	IS1	0.774	0.799	0.862	0.911	0.870	0.829	0.691	0.618
		IS2	0.822							
		IS3	0.893							
	TS	TS1	0.867	0.771	0.905		0.905		0.705	
		TS2	0.859							
		TS3	0.814							
		TS4	0.818							
	T	T1	0.815	0.788	0.886		0.886		0.723	
		T2	0.824							
		T3	0.908							
IVR		IVR1	0.877		0.925		0.928		0.650	
		IVR2	0.792							
		IVR3	0.712							
		IVR4	0.761							
		IVR5	0.755							
		IVR6	0.795							
		IVR7	0.929							
AVR		AVR1	0.904			0.934	0.937		0.716	
		AVR2	0.713							
		AVR3	0.813							
		AVR4	0.861							
		AVR5	0.847							
		AVR6	0.921							

Table 6 Fornell-Larcker criterion.

	TRIF	OF	IVR	AVR
TRIF	0.785			
OF	0.601	0.786		
IVR	0.615	0.527	0.806	
AVR	0.559	0.559	0.636	0.846

4.3 **Structural equation modelling results (SEM)**

Structural Equation Modeling (SEM) is a method for establishing, estimating, and testing causal relationship models 0. In this study, SEM was used to test the hypotheses, and the results are shown in Tables 7 and 8. There is a significant positive correlation between Technology-related Individual Factor and the Adoption of VR, with a confidence level of 95%, a standardised beta estimate value of 0.159, a critical ratio (C.R.) value of 2.099 (C.R. > 1.96), and a p-value of 0.036 ($p < 0.05$). Another exogenous variable, namely Organizational Factors, also has a significant positive correlation with the Adoption of VR, with a confidence level of 95%, a standardised beta estimate value of 0.249, a critical ratio (C.R.) value of 3.741 (C.R. > 1.96), and a p-value less than 0.001. In this study, there is also a significant positive correlation between the two exogenous variables and the mediating variable. The standardised beta estimate values of Technology-related Individual Factor and Organizational Factors for the Intention to use VR are 0.466 and 0.247, respectively, with critical ratio (C.R.) values of 5.7 and 3.369 (C.R. > 1.96), and p-values all less than 0.001, which confirms the existence of significant relationships. There is also a significant positive correlation between the mediatin variable Intention to use VR and the dependent variable Adoption of VR (S.T.D. (β) = 0.407, C.R. = 6.785 > 1.96, $p < 0.001$). In this study, to test the significance of the mediating effect, the Bootstrap method was adopted, with 5000 resampling times, and the Percentile Confidence Interval and Bias-Corrected Confidence Interval were calculated, with a confidence level of 95%. When the confidence interval does not include zero, it indicates that the mediating effect is significant. Table 8 shows that the indirect effect of H6 is equal to 0.369, p = 0.000 ($p < 0.001$), and the 95% confidence interval does not include zero, which indicates that the indirect effect is significant. At the same time, the direct effect of TRIF on AVR is equal to 0.350, p = 0.001 ($p < 0.01$), and the 95% confidence interval does not include zero, which indicates that the direct effect is also significant. Overall, IVR plays a partial mediating role in the relationship between TRIF and AVR.

Table 9 shows that the indirect effect of H7 is equal to 0.334, p = 0.000 ($p < 0.001$), and the 95% confidence interval does not include zero, which indicates that the indirect effect is significant. At the same time, OF has a direct effect on AVR with a standardised beta estimate value of 0.415, p = 0.000 ($p < 0.001$), and the 95% confidence interval does not include zero, which indicates that the direct effect is also significant. Overall, IVR plays a partial mediating role in the relationship between PI and AVR. The results of the structural equation model in this study are shown in Figure 2. The standardized beta values and significance levels have been marked in the figure.

Table 7 Hypothesis 1-5 results.

Hypothesis	Path	S.T.D.(β)	C.R.	p	Results
H1	Technology-related Individual Factor→Adoption of VR	0.159	2.099	0.036	Supported
H2	Organizational Factors→Adoption of VR	0.249	3.741	***	Supported
H3	Technology-related Individual Factor→Intention to use VR	0.466	5.7	***	Supported
H4	Organizational Factors→Intention to use VR	0.247	3.369	***	Supported
H5	Intention to use VR→Adoption of VR	0.407	6.785	***	Supported

Table 8 Hypothesis 6 results (Bootstrap).

Path relationship	Point estimate	Product of coefficient		Bootstrapping					
				Bias-corrected			Percentile		
		SE	Z	Lower	Upper	P	Lower	Upper	P
Indirect Effects									
TRIF→IVR→AVR	0.369	0.075	4.920	0.251	0.557	0.000	0.239	0.530	0.000
Direct Effects									
TRIF→AVR	0.350	0.086	4.070	0.190	0.530	0.001	0.184	0.525	0.001
			Total Effects						
	0.719	0.090	7.989	0.560	0.917	0.000	0.546	0.904	0.000

Table 9 Hypothesis 7 results (Bootstrap).

Path relationship	Point estimate	Product of coefficient		Bootstrapping					
				Bias-corrected			Percentile		
		SE	Z	Lower	Upper	P	Lower	Upper	P
Indirect Effects									
OF→IVR→AVR	0.334	0.059	5.661	0.235	0.473	0.000	0.225	0.461	0.000
Direct Effects									
OF→AVR	0.415	0.085	4.882	0.258	0.598	0.000	0.259	0.600	0.000
			Total Effects						
	0.748	0.093	8.043	0.579	0.949	0.000	0.577	0.944	0.000

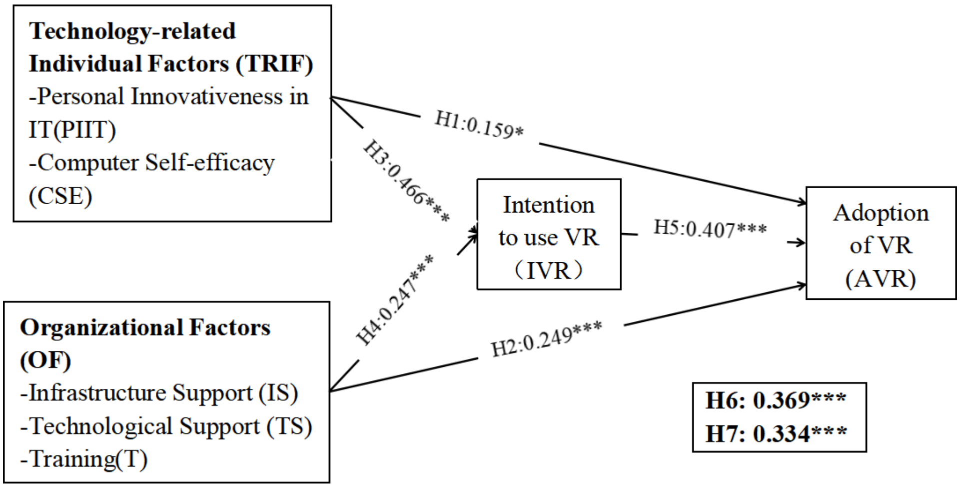

Fig. 2. SEM results with beta measure and significance.

5. DISCUSSION

5.1 Findings

This study explored the influence of technical-related individual factors and organizational factors on students' adoption of VR. The research results indicated that technical-related individual factors were positively correlated with students' adoption of VR, thereby supporting Hypothesis 1 in the conceptual framework. This result was consistent with previous studies [64] and confirmed that Technology-related individual factors are one of the most important determinants for students' adoption of VR. In the digitalization era, personal innovation and self-efficacy in IT can motivate students to try new technologies, thereby promoting the adoption of VR. Students with higher technical confidence and innovation awareness are more inclined to explore and use new tools, thereby increasing the frequency of VR usage.

The research results also showed that organizational factors have a direct impact on students' adoption of

VR, including infrastructure support provided by the organization, technical support, and VR training. Hypothesis 2 in the conceptual framework was also supported, which was consistent with previous studies [24-25]. The availability of organizational resources, the completeness of the teaching support system, and the training levels of teachers and technicians are all key driving forces for students to actively adopt VR technology.
The research results also indicated that technical-related individual factors and organizational factors have a significant impact on students' intention to use VR, thereby supporting Hypotheses 3 and 4. This is consistent with previous research results [65]. The higher the students' technical literacy, the stronger their intention to use VR. Additionally, external resources provided by the organization, such as infrastructure, technical support, and training, have a positive effect on students' intention to use VR. Intention to use has a direct impact on the adoption of VR, supporting Hypothesis H5 and verifying the key role of intention in the formation process of adoption behavior.
The research results verified the mediating effect of students' intention to use VR, supporting Hypotheses H6 and H7. Most previous studies on the mediating role of intention in influencing factors and adoption have been at the theoretical level, and empirical research is still relatively lacking. This study from the empirical perspective verified the bridging role of intention in the influence process of individual and organizational factors on adoption. From the perspective of the technology adoption mechanism, the activation of intention means that the subjective cognition of the individual about the value and feasibility of the technology has reached a certain critical point, and the behavioral intention transforms from "cognitive acceptance" to "action adoption". This mediating path not only reflects the important transitional role of intention from the psychological level to the behavioral level, but also reveals the core key of the "passive supply" to the "active adoption" in the promotion of educational technology.

5.2. Theoretical Contributions

This study incorporates both technology-related individual factors (including IT personal innovation and computer self-efficacy) and organizational factors (including infrastructure, technical support, and training) into the analytical framework, systematically exploring the key antecedent variables that influence college students' adoption of VR. Compared to previous studies that mainly focused on technical features or personal motivational factors, this research emphasizes the interaction between individual capabilities and organizational support, enriching the theoretical structure of technology adoption models (such as TAM, UTAUT) and expanding the research perspective in the field of educational technology.
This study empirically verified the mediating role of intention in the relationship between influencing factors and students' adoption of VR. Although the mediating effect of behavioral intention has been widely discussed in technology adoption theories, it mostly remains at the theoretical level and lacks systematic empirical support, especially in the context of immersive educational technologies (such as VR). The findings of this study not only fill the empirical gap in such research but also enhance the explanatory power of the technology adoption path mechanism, providing theoretical evidence for how college students move from "intention" to "adoption".
Based on primary questionnaire data, this study uses a structural equation model to systematically analyze the path relationships between variables. Compared with traditional research methods that rely on government data or teaching feedback, the data sources of this study are more targeted. The research results provide an empirical path and method framework for subsequent studies on the adoption of immersive educational technologies.

5.3. Practical Contributions

The research results indicate that individual factors related to technology, including IT personal innovation and computer self-efficacy, have a significant impact on students' intentions to use VR and their final adoption behavior. This finding suggests that universities should pay special attention to the cultivation of students' personal technical attitudes and abilities when promoting VR teaching applications. By introducing innovation training in teaching, conducting computer skills improvement courses, and enhancing students' confidence in technology, and strengthening their identification and initiative towards VR, the overall adoption level can be improved.

Secondly, organizational factors, including infrastructure support, technical support, and training, have a

significant impact on VR usage intentions and adoption. This finding indicates that higher education institutions, when implementing VR teaching reforms, should not only build complete hardware and software facilities but also provide a stable technical support team and regularly organize professional training for students and teachers to ensure the accessibility and operability of technology.
The research results also show that students' intention to use VR has a positive impact on their adoption of VR and plays a partial mediating role between the influence of technology-related individual factors and organizational factors on adoption and adoption behavior. This indicates that stimulating students' usage intentions is a key bridge to promote their actual adoption of VR. Therefore, higher education institutions should enhance students' enthusiasm and interest through various means to strengthen their motivation for technology use.

5.4 Limitations
The data for this study came from higher education institutions in Nantong City, Jiangsu Province, China. The sample has a certain regional characteristic and may not fully reflect the overall trend of VR adoption among students in different regions. Therefore, future research can further expand the sample coverage. This study mainly focuses on technology-related individual factors and organizational factors related to technology, although it explains the important paths of VR adoption, it has not covered other key variables that may affect students' behavior, such as personal perception and social influence. Future research can consider new influencing factors and construct new models.

6. CONCLUSION
The findings of this study indicate that technical-related individual factors (such as IT personal innovation and computer self-efficacy) and organizational factors (such as infrastructure support, technical support, and training) influence students' intention to use VR, which in turn directly or indirectly affects their adoption of VR. In promoting the application of educational technology, it is necessary to enhance students' individual technical confidence and establish a favorable organizational support environment. The conclusions of this study provide theoretical guidance for universities to effectively integrate VR into teaching practices, and also offer practical basis for relevant educational administrative departments when formulating resource investment and capacity building strategies.

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