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Key Factors Shaping Vocational College Students' Perceived Usefulness and Behavioral Intentions to Adopt Internet of Things (IoT) Technology in Sichuan, China

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Abstract

Purpose: This paper aims to study which factors significantly impact students' behavioral intention and perceived usefulness in higher vocational colleges in Sichuan, China when using the Internet of Things (IoT). The conceptual framework illustrates the causal relationships among perceived enjoyment, perceived security, perceived convenience, perceived usefulness, perceived ease of use, trust, and behavioral intention. **Research design, data, and methodology:** The author surveyed students at Sichuan Traffic Vocational and Technical College using quantitative techniques (n=500). The non-probability sampling included judgment sampling of students from four information technology-related majors at the institution, quota sampling to determine the sample size, and convenience sampling for data collection and questionnaire distribution both online and offline. The researchers employed structural equation modeling (SEM) and confirmatory factor analysis (CFA) for data analysis, which included model fit, reliability, and structural validity. **Results:** There are significant causal relationships between perceived enjoyment, perceived security, and trust with behavioral intention as proposed in the conceptual framework. Perceived convenience and perceived ease of use have a significant impact on perceived usefulness, which serves as a key mediating variable that significantly influences behavioral intention. **Conclusion:** To improve the credibility of future studies, it is recommended to gather insights from a wider variety of industry groups, increase the diversity of participants, and collect data at multiple time points.

Keywords: Perceived Enjoyment Perceived Security, Perceived Convenience, Behavioral Intention, Internet of Things

JEL Classification Code: E44, F31, F37, G15

1. Introduction

The Internet of Things was first proposed in 1999 by British academic Ashton (2009). It involves installing microchips and communication antennas in real-world devices, giving them unique identification numbers (such as IP addresses), and digitally twinning them with the analog world (Gubbi et al., 2013).

David (2014) highlighted the significant impact of the Internet of Things (IoT) on our daily lives. Sun et al. (2023) demonstrated the extensive adoption of IoT technology across diverse industries, including home appliances, healthcare, retail, energy, manufacturing, and logistics. Additionally, it has been integrated into various other domains, such as household appliances, remote control appliances, vehicles, and beyond. The Internet of Things has also become a prevalent feature in academic settings. In their research, Lai and Chang (2011) found that IoT technology can realize the management and services of students, teachers, and campus resources through intelligence and systematization and improve campus operation efficiency and service quality.

Smedley (2021) argued that security issues have become increasingly prominent with the proliferation of IoT devices. Lee and Moon (2018) stated that IoT devices often need to

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connect to a network to function, which can inconvenience users. Wang et al. (2019) pointed out that due to the complex functions and settings of IoT devices, users found it difficult to use them. Jones and Potter (2020) suggested in their study that users might be concerned about the impact of IoT devices on their privacy. To address these issues, it is necessary to enhance research and innovation in IoT technology to improve security, convenience, ease of use, and usability while increasing user trust.

In this study, we explored the factors influencing the behavioral intention. We perceived the usefulness of IoT usage among higher vocational college students in Sichuan, China, considering seven factors: Perceived Enjoyment (PE), Perceived Security (PS), Perceived Convenience (PC), Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Trust (TR), and Behavioral Intention (BI). We proposed seven research questions to deeply investigate the relationships among the conceptual framework's independent, mediating, and dependent variables. Vocational colleges in China refer to educational institutions established to cultivate skilled professionals, including higher education institutions and secondary vocational schools.

The study population was from the Sichuan Vocational and Technical College of Communications, representing university students in Sichuan Province as they come from various administrative regions. The selected participants were students from information technology-related majors with IoT usage experience. The author quantitatively analyzed the seven hypotheses in the research framework using data collected through questionnaires. The results of these analyses identified the factors influencing the behavioral intention and perceived usefulness of IoT usage among higher vocational college students in Sichuan. The findings help IoT device manufacturers optimize their design and production concepts to influence the choice of IoT devices by higher vocational students in information technology-related majors in Sichuan.

2. Literature Review

2.1 Perceived Convenience

Arfi et al. (2021) showed that convenience has a positive and significant effect on the perceived usefulness of e-wallet users. In a study exploring mobile banking adoption, Al-Jabri and Sohail (2012) found that perceived convenience positively influenced perceived usefulness. Another study by Kim and Park (2013) focused on online shopping and revealed that perceived convenience significantly affected perceived usefulness. When examining the adoption of health-related mobile applications, Zhang et al. (2018) found that perceived convenience was a significant predictor of perceived usefulness. In the context of e-learning, a study by Arfi et al. (2021) demonstrated that learners' perceptions of convenience positively influenced their perceptions of usefulness. Finally, a study by Lee and Kim (2020) exploring the adoption of smart home devices found that perceived convenience significantly impacted perceived usefulness. Therefore, the researchers put forward the following assumptions based on previous studies.

H1: Perceived convenience has a significant impact on perceived usefulness.

2.2 Perceived Enjoyment

Smith (2018) examined the impact of perceived enjoyment on consumer behavior, finding that individuals who reported greater enjoyment were more likely to exhibit positive behavioral intentions, such as repurchasing or recommending a product. Johnson and Chen (2019) tested the Theory of Planned Behavior to examine the relationship between perceived enjoyment and purchase intentions. Wang and Lee (2020) investigated the mediating role of perceived enjoyment in the relationship between brand image and purchase intentions. Zhang and Chen (2021) cross-cultural analysis highlight that perceived enjoyment consistently impacts behavioral intentions across different cultural backgrounds. Rodríguez and Fernández (2022) investigated the role of perceived enjoyment in predicting purchase intentions in the digital age. Therefore, the researchers put forward the following assumptions based on previous studies.

H2: Perceived enjoyment has a significant impact on behavioral intentions.

2.3 Perceived Security

Smith et al. (2020) examined the relationship between consumers' perceived security and behavioral intentions when shopping online. Johnson and Chen (2021) conducted a cross-cultural analysis to investigate the role of perceived security in consumer behavior. Lee and Kuan (2022) examined the mediating role of perceived security in the relationship between brand image and purchase intentions. Rodríguez et al. (2023) conducted a field study to investigate the impact of perceived security on consumer behavior in a physical store environment. Zhang et al. (2023) examined the role of perceived security in predicting online purchase intentions.

H3: Perceived security has a significant impact on behavioral intentions.

2.4 Perceived Usefulness

Smith et al. (2021) examined how consumers' perceived usefulness of digital products or services impacts their

behavioral intentions. Johnson and Lee (2022) examined the role of perceived usefulness in online learning environments and its impact on behavioral intentions. Lee and Moon (2018) examined how employees' perceived usefulness of work-related technologies impacts their behavioral intentions and job satisfaction. Wang et al. (2015) examined how consumers' perceived usefulness of social media marketing messages impacts their behavioral intentions. Wang and Lee (2020) explored the relationship between patients' perceived usefulness of healthcare technologies and their behavioral intentions in a hospital setting.

H4: Perceived usefulness has a significant impact on behavioral intentions.

2.5 Perceived Ease of Use

Chen et al. (2001) examined how individuals' perceptions of the ease of use of technology impact their assessment of its usefulness. Kim and Lee (2022) investigated the role of perceived ease of use in e-learning environments and its impact on learning outcomes. Zhang and Chen (2021) conducted a field investigation to explore the relationship between consumers' perceptions of the ease of use and usefulness of consumer technology products. Wang et al. (2019) examined how individuals' perceptions of the ease of use of mobile applications impact their satisfaction with those applications.

Zhang and Chen (2021) examined how individuals' perceptions of the ease of use of online shopping websites impact their behavioral intentions to make purchases. Wang et al. (2007) explored the relationship between consumers' perceptions of ease of use and their behavioral intentions in retail stores. Lee et al. (2021) conducted a field investigation to examine the relationship between individuals' perceptions of ease of use and their behavioral intentions in mobile applications. Chen et al. (2014) investigated how individuals' perceptions of the ease of use of social media platforms impact their behavioral intentions to engage with these platforms. Chen and Chen (2002) conducted a qualitative investigation to explore the relationship between individuals' perceptions of ease of use and their behavioral intentions in healthcare settings.

H5: Perceived ease of use has a significant impact on perceived usefulness.

H6: Perceived ease of use has a significant impact on behavioral intentions.

2.6 Trust

Smith and Rupp (2010) examined how trust in online banking impacts consumer behavioral intentions. Kim et al. (2011) conducted a cross-cultural analysis to explore the role of trust in e-commerce across different cultures. Johnson and Grayson (1992) investigated the relationship between trust and behavioral intentions in healthcare. Zhang and Prybutok (2003) conducted an experimental investigation to explore the impact of trust on behavioral intentions in online shopping. Wang et al. (2014) conducted a longitudinal analysis to explore the relationship between trust and behavioral intentions in social media.

H7: Trust has a significant impact on behavioral intentions.

3. Research Methods and Materials

3.1 Research Framework

The conceptual framework of this study is based on these theoretical foundations, including the Technology Acceptance Model (TAM) first proposed by Davis et al. (1989), the Innovation Diffusion Theory (IDT) introduced by Rogers (1962), and the Structural Equation Model (SEM) developed by Jöreskog (1973). Additionally, this study employs the Technology Acceptance Model to analyze and validate the relevant variables. It investigates the perceived usefulness and behavior of college students when using the Internet of Things (IoT), focusing on factors such as perceived convenience, enjoyment, security, ease of use, trust, and usefulness as influencing factors of intention. These theories support and establish the conceptual framework of this paper. We explored the causal relationships among these variables to understand the factors affecting the perceived usefulness and behavioral intention of higher vocational college students in Sichuan when using IoT. Based on this, the researcher has developed a conceptual framework for this study, as described in Figure 1

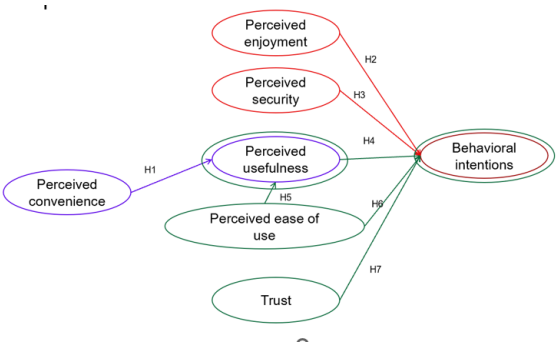

Figure 1: Research Conceptual Framework

H1: Perceived convenience has a significant impact on perceived usefulness.

H2: Perceived enjoyment has a significant impact on behavioral intentions.

H3: Perceived security has a significant impact on behavioral intentions.
H4: Perceived usefulness has a significant impact on behavioral intentions.
H5: Perceived ease of use has a significant impact on perceived usefulness.
H6: Perceived ease of use has a significant impact on behavioral intentions**.**
H7: Trust has a significant impact on behavioral intentions.

3.2 Research Methodology

Researchers adopted a quantitative approach with non-probability sampling, distributing questionnaires to the target population through an online platform (Johnson & Turne, 2020). This study's target population included students from four information technology-related majors at Sichuan Vocational and Technical College of Communications, including Electronic Information Engineering. We analyzed the feedback data to explore the factors influencing the perceived usefulness and behavioral intention of higher vocational college students in Sichuan using the Internet of Things (IoT).

The questionnaire for this study comprised three parts. The first part included screening questions. The second part covered demographic questions, including six questions on personality, student status, age, frequency of IoT usage, and more. The third part consisted of a five-point Likert scale to measure all variables. The scale items assessed the seven hypotheses of this study, ranging from 1 (strongly disagree) to 5 (strongly agree).

3.3 Population and Sample Size

Researchers adopted non-probability, judgment, and quota sampling methods to select students from four information technology-related majors at Sichuan Vocational and Technical College of Communications. They distributed the questionnaire via an online platform. Table 1 shows the specific sampling of this study.

3.4 Sampling Technique

Before conducting a large-scale survey, researchers successfully employed the Cronbach's Alpha method to test the validity and reliability of the study's questionnaire. The researcher performed a pilot test with 50 respondents, with the results of acceptable value of Cronbach's alpha at over 0.7. The questionnaire used for the pilot test received a positive rating in terms of Item Objective Congruence (IOC) from experts, with the results of all items passed at over 0.6 (Tavakol & Dennick, 2011). Subsequently, the researchers distributed the survey to 500 target respondents and received satisfactory feedback. We utilized SPSS AMOS for statistical testing and analyzed the feedback data. Confirmatory Factor Analysis (CFA) was conducted to test the accuracy and validity of convergence. These measures validated the fit of the conceptual framework of this study, confirming the model's validity and reliability. Finally, researchers used Structural Equation Modeling (SEM) to examine the causal relationships between variables.

In July 2023, the researchers conducted a survey. The data screening process ensured that the target population was appropriate. There were 500 students from four information technology-related majors at Sichuan Vocational and Technical College of Communications. These students came from various administrative regions of Sichuan Province. The specialized teachers supported this study and encouraged students to participate in the online questionnaire of this study.

Table 1: Sample Units and Sample Size

college majors	Population Size	Proportional Sample Size
Electronic Information Engineering st udents	96	45
software technology students	390	185
Modern logistics management	360	170
Internet of Things students	210	100
Total	**1056**	**500**

Source: Constructed by author

4. Results and Discussion

4.1 Demographic Information

Researchers collected demographic information from participants, including their gender, age, and major (Manski, 2004). We distributed questionnaires to 500 students in information technology-related majors at Sichuan Vocational and Technical College of Communications. Among the respondents, there were 265 females (53%) and 235 males (47%). There were 330 respondents aged 18 to 20, 170 respondents aged 21 to 22, and 14 respondents aged 23 to 24, accounting for 66%, 31.2%, and 2.8 %respectively. At the same time, 21 respondents used the Internet of Things once a week, 66 used it 2 to 3 times a week, 123 used it 4 to 7 times a week, and 290 used it more than seven times per week. This breakdown accounted for 4.2%, 13.2%, 24.6%, and 58% of the total respondents, respectively, and the overall proportion was generally in line with expectations. These participants had weekly experience utilizing IoT and voluntarily took part in the questionnaire survey for this study. Their feedback data contribute to exploring factors influencing behavioral intention and perceived usefulness regarding IoT usage among students in information technology programs at vocational colleges in Sichuan. Table 2 presents demographic information for this study.

Table 2: Demographic Profile

Demographic and General Data (N=500)		Frequency	Percentage
Gender	Male	235	47%
	Female	265	53%
Age	18-20	330	66%
	21-22	156	31.2%
	23-34	14	2.8%
	More than 24	0	0
The frequency of using the Internet of Things every week	0	0	0%
	1	21	4.2%
	2-3	66	13.2%
	4-7	123	24.6%
	More than 7	290	58%

4.2 Confirmatory Factor Analysis (CFA)

This paper used confirmatory factor analysis (CFA) to measure each variable in the conceptual framework of this study. The measurement results showed that all scales were used. This paper used confirmatory factor analysis (CFA) to measure each variable in the conceptual framework of this study. The measurement results showed that all scale items for each variable were significant. Additionally, the factor loadings for each scale item were acceptable, indicating that the conceptual framework of this study was a good fit. All factor loadings in this study were greater than 0.30, all p-values were less than 0.05, all construct reliabilities were greater than 0.70, and all average extracted variances were greater than 0.50. These estimates were all significant. Table 3 shows all these values.

Table 3: Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Variables	Source of Questionnaire (Measurement Indicator)	No. of Item	Cronbach's Alpha	Factors Loading	CR	AVE
Perceived Enjoyment (PE)	Xin et al. (2023)	3	0.785	0.752-0.781	0.811	0.589
Perceived security (PS)	Xin et al. (2023)	4	0.825	0.694-0.796	0.809	0.587
Perceived convenience (PC)	Xue et al. (2021)	3	0.717	0.766-0.818	0.839	0.634
Perceived usefulness (PU)	Xue et al. (2021)	3	0.795	0.493-0.873	0.753	0.517
Perceived ease of use (PEOU)	Lingling et al. (2013)	3	0.875	0.781-0.803	0.837	0.632
Trust (TR)	Lingling et al. (2013)	4	0.732	0.655-0.816	0.846	0.581
Behavioral Intention (BI)	Xin et al. (2023)	4	0.826	0.620-0.801	0.809	0.516

As shown in Table 4, the square roots of the extracted level differences align with the correlations observed among the examined variables. Therefore, these correlations are appropriate. In this study, several indicators, specifically GFI, AGFI, NFI, CFI, TLI, and RMSEA, were used to evaluate model fit in the Confirmatory Factor Analysis (CFA).

Table 4: Goodness of Fit for Measurement Model

Fit Index	Acceptable Criteria	Statistical Values
CMIN/DF	< 5.00 (Al-Mamary & Shamsuddin, 2015; Awang, 2012)	359.874/231or 1.558
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.945
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.929
NFI	≥ 0.80 (Wu & Wang, 2006)	0.930
CFI	≥ 0.80 (Bentler, 1990)	0.974
TLI	≥ 0.80 (Sharma et al., 2005)	0.969
RMSEA	< 0.08 (Pedroso et al., 2016)	0.033
Model Summary		**Acceptable Model Fit**

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker Lewis index, and RMSEA = root mean square error of approximation

Table 5 presents the results for convergent and discriminant validity. These values were considered acceptable. Overall, all measurements confirmed the validity of the structural model proposed in this study.

Table 5: Discriminant Validity

	PE	PS	PEOU	TR	PC	PU	BI
PE	**0.767**						
PS	0.139	**0.766**					
PEOU	0.258	0.242	**0.795**				
TR	0.280	0.283	0.277	**0.762**			
PC	0.270	0.230	0.236	0.248	**0.796**		
PU	0.293	0.323	0.277	0.334	0.293	**0.719**	
BI	0.284	0.326	0.322	0.350	0.285	0.359	**0.718**

Note: The diagonally listed value is the AVE square roots of the variables
Source: Created by the author.

4.3 Structural Equation Model (SEM)

Wheaton et al. (1977) suggested that the chi-square/degrees of freedom (CMIN/DF) ratio for model fit metrics should be less than 5.00. Jöreskog and Sörbom (1984) and Sica (2003) recommended that the acceptable value for GFI should be set at greater than or equal to 0.85 and AGFI at greater than or equal to 0.80. Bentler and Bonett (1980) suggested that NFI should be greater than 0.80. According to the studies by Bentler (1990), Wheaton et al. (1977), and Wu

(2009), the acceptable values for NFI, CFI, and TLI are recommended to be greater than or equal to 0.80. Pedroso (2003) set the acceptable value for the Root Mean Square Error of Approximation (RMSEA) at less than 0.08. The fit index results of this study showed a good fit: CMIN/df = 2.616, GFI = 0.890, AGFI = 0.865, NFI = 0.876, CFI = 0.919, TLI = 0.909, and RMSEA = 0.57. Table 6 displays these values.

Table 6: Goodness of Fit for Structural Model

Fit Index	Acceptable Criteria	Statistical Values
CMIN/DF	< 5.00 (Al-Mamary & Shamsuddin, 2015; Awang, 2012)	640.984/245 or 2.616
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.890
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.865
NFI	≥ 0.80 (Wu & Wang, 2006)	0.876
CFI	≥ 0.80 (Bentler, 1990)	0.919
TLI	≥ 0.80 (Sharma et al., 2005)	0.909
RMSEA	< 0.08 (Pedroso et al., 2016)	0.057
Model Summary		**Acceptable Model Fit**

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker Lewis index, and RMSEA = root mean square error of approximation

4.4 Research Hypothesis Testing Result

Researchers calculated the significance of the research model based on the regression weights and R^2 variances of each variable. Table 7 lists the calculated results. These results support all the hypotheses of this study. Perceived convenience influences Perceived usefulness (β=0.274), Perceived enjoyment influences Behavioral intentions (β=0.165), Perceived security influences Behavioral intentions (β=0.222), Perceived usefulness influences Behavioral intentions (β=0.183), Perceived ease of use influences Perceived usefulness (β=0.217), Perceived ease of use influences Behavioral Intention (β=0.210), and Trust influences Behavioral intentions (β=0.229)

Table 7: Hypothesis Results of the Structural Equation Modeling

Hypothesis	(β)	t-value	Result
H1: PC → PU	0.274	4.668*	Supported
H2: PE → BI	0.165	3.342*	Supported
H3: PS → BI	0.222	4.345*	Supported
H4: PU → BI	0.183	3.362*	Supported
H5: PEOU → PU	0.217	3.890*	Supported
H6: PEOU → BI	0.210	3.946*	Supported
H7: TR → BI	0.229	4.481*	Supported

Note: * p<0.05
Source: Created by the author

Based on the results in Table 7, the researchers concluded that establishing H1 and H5 showed that PC and PEOU were the two key drivers of PEOU, with standard coefficient values of 0.274, and 0.217 for the structural pathway, respectively. The establishment of H2 shows that PE is one of the key drivers of BI, and its standard coefficient value of the structural path is 0.165. The establishment of H3 shows that PS is one of the key drivers of BI, and its standard coefficient value of the structural path is 0.222. The establishment of H4 shows that the intermediate variable PU is one of the key driving factors of BI, and its standard coefficient value of the structural path is 0,183. The establishment of H6 shows that PEOU is one of the key drivers of BI, and its standard coefficient value of the structural path is 0.210. Establishing H7 shows that TR is one of the key driving factors affecting BI, and the standard coefficient value of its structural path is 0.229.

5. Conclusion and Recommendation

5.1 Conclusion

The Internet of Things (IoT) is a network technology based on the Internet that enables the interconnection, information exchange, and communication of various objects and devices, offering broad application prospects and development potential. The application of IoT technology in China is very promising, with a continuously expanding market scale, increasingly widespread application fields, and strong support and technological innovation from the government. This paper studies the factors affecting the behavioral intention and perceived usefulness of IoT usage among students majoring in information technology at vocational colleges in Sichuan.

The target population of this study comprised 500 students from information technology-related majors at Sichuan Vocational and Technical College of Communications. These students had experience using IoT and a certain level of understanding of IoT and voluntarily participated in the questionnaire survey for this study. Researchers developed a questionnaire using a five-point Likert scale, which passed the Item Objective Congruence test conducted by three experts. A pilot test with a sample size of 50 supported the internal consistency and reliability of the conceptual framework of this study.

Researchers collected 500 valid questionnaires. Upon receiving the questionnaires, the staff tested the validity and reliability of the data returned. The test results indicated that the convergent validity, composite reliability, Cronbach's alpha reliability, factor loadings, average variance extracted, and discriminant validity of these data were all acceptable. Researchers analyzed the sample data using SPSS and

JAMOVI. The conceptual framework of this study passed the AMOS test. The CFA results indicated that the data related to this study were a good fit. The use of factor structure and validation models in this study was appropriate.

The above data support the seven hypotheses of this study. The results indicate that perceived ease of use and convenience are important factors in measuring users' acceptance of new technology, significantly influencing the perceived usefulness of IoT technology. Additionally, perceived usefulness, security, ease of use, enjoyment, and trust significantly affect users' behavioral intentions to use IoT technology.

5.2 Recommendation

Based on the findings of this study, we propose the following recommendations. Firstly, IoT device manufacturers can influence the perceived usefulness and behavioral intentions of higher vocational students in Sichuan by adjusting five key factors: perceived usefulness, perceived enjoyment, perceived security, trust, and perceived convenience. For example, manufacturers can prioritize enhancing the security of their devices during development to instill a strong sense of security in users, thereby positively influencing their behavioral intentions. Similarly, improving the user interface of IoT devices can enhance the user experience and ease of use, thus impacting perceived usefulness.

Secondly, this study identified the relationships among these seven variables. These relationships connect the variables into a cohesive whole and construct the conceptual framework of this paper. This framework illustrates the mechanism influencing the perceived usefulness and behavioral intentions of higher vocational students in Sichuan using IoT. IoT device manufacturers can optimize this operational mechanism to enhance these students' behavioral intentions and satisfaction with IoT devices. For instance, manufacturers can focus on and optimize the mediating factors within this mechanism, which significantly affect users' perceived usefulness and behavioral intentions.

5.3 Limitation and Further Study

This study's limitations and future research directions are mainly reflected in two aspects. Firstly, the application of IoT technology is very complex. The data measuring the variables in this study come from a specific school, population, and period, with the data providers primarily being young students. The singular nature of the research subjects limits the ability to infer causal relationships. Therefore, future research should gather opinions from a broader range of industry groups, expand the scope and diversity of research subjects, and conduct data collection at various time points to further enhance the credibility of the research results.

Secondly, considering the theme of this study, it only surveyed higher vocational students in Sichuan and did not include other user groups. Students are primarily exposed to IoT technology in the educational field, but IoT encompasses many other areas, such as smart transportation, smart agriculture, and more. The selection of influencing factors in this study may not be comprehensive enough. Therefore, future research should further collect opinions from a wider range of fields related to IoT to strengthen the survey's coverage and refinement.

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