The International Conference on Interdisciplinary Humanities and Communication Studies
DOI: 10.54254/2753-7048/6/20220353

Analysis of Chinese College Students' Acceptance of Massive Open Online Courses

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Abstract: Since the pandemic constrained people's movement somehow, more and more Chinese college students have participated in Massive Open Online Courses (MOOCs) learning. Although numerous studies concluded factors affected MOOCs learning, few scholars mentioned academic self-efficacy (ASE) exerting a moderator effect. The study aimed to give institutions and course designers guidance for further greater MOOC application by demonstrating certain students' behavior. This research analyzed the factors affecting MOOCs participation based on the Unified Theory of Acceptance and Use of Technology (UTAUT) theoretical framework, and academic self-efficacy's moderating effect on that framework. A questionnaire was designed in this paper according to previous studies and surveyed several Chinese universities. It grew to become out that the result upheld speculations by examining the information, to be specific, students' behavioral deliberate have a positive connection with exertion and execution anticipation, social impact, and encouraging conditions individually. Moreover, academic self-efficacy plays a significant moderating role in MOOCs participation. At the end of this paper, the calculation results will be further analyzed and discussed.

Keywords: UTAUT, academic self-efficacy, MOOCs, Chinese university student

1. Introduction

1.1. Research Background

After the Covid-19 widespread, innovative variables are playing a critical part in impacting clients toward online courses. The MOOCs give bounty significant openings for instructive partners, particularly understudies in higher instruction, which gives more high-quality assets for these understudies to memorize [1].

DOI: 10.54254/2753-7048/6/20220353

MOOC is an emerging platform establishing free online courses. According to New York Times columnist Thomas Friedman, "There is no greater potential than the MOOC to increase access to quality higher education, lift people out of poverty, and unlock more than a billion brains to solve the world's problems". Ever as the reason that it is coming, the path registration has been growing in index form, as evidenced by more than the wide variety of college students from fifty-eight million in about six thousand distinct publications [2]. Within the developing advertising for enormous MOOCs, understudies have acknowledged and recognized the convenience of online learning at colleges [3]. MOOCs are categorized into 2 kinds, specifically, xMOOCs and cMOOCs. xMOOCs is a radio mannequin with comparable elements together to traditional lessons, concluding professors' prepared content, cMOOCs extract the course material all through the path.

MOOCs make buildup in China as an instructive advancement that possibly amplifies the get to surprising instructive assets to a bigger populace. MOOCs originated from well-known overseas universities imparting common video instructions on the Internet, after that the universities in China started to provide MOOCs as the phase of their education. The improvement of MOOCs had a critical effect on conventional instruction demonstrating of Chinese colleges' systems no longer solely grant high-quality curriculum resources, but additionally facilitate the perfect attendance of students, who can take part in lessons, and get hold of college credits, all except attending a college. The achievement of China's goal to "remove the barriers which limit long term instruction advancement and endeavor to make strides the progressive effect of data innovation on instructive thoughts, educating strategies, and educating methods" gives a down-to-earth consultation for the part MOOCs can act within the advancement of better instruction segment [4].

1.2. Research Gap

As the MOOC phenomenon expands, the strong debate regarding the viability of MOOCs as a sound teaching modality for a diverse global student population has ignited within the community college system [4]. Be that as it may, it comes normally with a few characteristic challenges no matter its rapid advancement and a few inherent benefits. The challenges comprise the need for standardization and adaptability, inadequacy to give real-time comments to understudies, ineptitude to achieve maintainable financial wages, and inadequately acing time for college understudies [5]. In expansion, it is troublesome to actualize instructing and prepare to manage the particular characteristics of understudies utilizing MOOC as teachers cannot identify the distinct characteristics of individuals among a huge number of participants through communication in person [5]. These dares have been devoted to a lower diploma of scholar attendance after joining MOOCs and acceptance charges through college students are generally low [6]. Though numerous types of research have recommended MOOC value in students' getting-to-know endeavors, the facts associated with MOOC utilization merchandising elements stay limited, especially for creating countries.

Numerous created models have been received for surveying the student's acknowledgment of MOOCs. Previous research has studied the participant of the MOOCs regarding various theory frameworks, together with the principle of reasoned motion (TRA), the technological know-how receives mannequin (TAM), the idea of deliberate conduct (TPB), the motivation mannequin, the mannequin of PC utilization (MPCU), the innovation diffusion principle (IDT), the mixed mannequin (TAM/TPB), the social cognitive concept (SCT), the UTAUT mannequin. Studies by scholars over the years are listed in Table 1.

Previous studies have analyzed the elements that impact the participation behavior of MOOCs, which brings a lot of reference and reference to this paper. Previous studies have mostly elaborated on self-efficacy, self-determination, and other factors as independent variables, and then enriched the UTAUT theory to a certain extent. However, few have analyzed the moderating effects of these factors.

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Table 1: Studies of MOOCs.

Author	Theory	Other dimensions
Alraimi et al., (2015)	TAM	perceived reputation, perceived openness, and user satisfaction.
Mulik et al., (2018)	TPB and SDT	Both regulated and uncontrolled motivation
Fianu et al. (2018)	TAM and TPB	
Wu and Chen (2017)	TAM, TTF and social motivation	Task-technology fit,individual-technology fit, social recognition, reputation and openness affect.
Yang et al. (2017)	DandM & TAM	System, course and service quality
Zhou (2017)	ECM	Both confirmation and satisfaction
Chan et al. (2019)	TAM	
Tarmuji et al. (2018)	Perceived Resources and TAM	Perceived resource
Mulik, Srivastava, and Yajnik (2018)	UTAUT	Perceived value
Fianu et al. (2018)	UTAUT	system quality,computer self-efficacy and instructional quality
Hamdan et al. (2018)	UTAUT	

This paper applies the UTAUT model, which clarifies perceived convenience and functionality, as well as the acceptance and behaviors that arise from use. Oh, and Yoon claims that the UTAUT is viable since it takes into account several factors and lays the groundwork for beliefs and experiences in 2014 [7]. They additionally formulated that the utility of this mannequin improves the intention in the direction of utilization based totally on endeavor and overall performance expectancy (PE), social influence (SI), and facilitating conditions (FC). The consolidation of the 2 factors, such as trip drift and belief, progresses the show consistency and increases its utilization as a model of Web benefit. Based on this, the UTAUT mannequin is determined advantageous in the application of modern-day science [8].

The method of reasoning for utilizing this show is that they give an appropriate system for investigating and classifying discoveries within the range of MOOC appropriation, fundamentally. In addition, it is also necessary to determine the reasons for students' specific behavioral characteristics toward MOOCs. A review of previous studies also shows that in the study of the UTAUT theoretical model, self-efficacy is analyzed as an extended independent variable, while few studies analyze the regulatory role of self-efficacy. Therefore, this paper combines academic self-efficacy with UTAUT to analyze the factors that affect students' participation in the MOOC environment.

Based on those theories, research questions were formulated: Does academic self-efficacy play a moderation effect between the UTAUT model and Chinese university students' participation in MOOC learning behavioral intention?

1.3. Structure of the Paper

Based on the UTAUT theory, this paper conducted research on eight comprehensive universities in China, obtained 247 valid questionnaires, and analyzed the data to first confirm the relevance of PE, EE, SI, and FC on MOOC usage intention in UTAUT theory, and confirmed that BI of MOOC has a

DOI: 10.54254/2753-7048/6/20220353

positive correlation on usage. Also, this paper demonstrates that academic self-efficacy acts a moderating character in the influence of factors in the UTAUT theory on the BI correlation of MOOC.

2. Literature Review

2.1. Unified Theory of Acceptance and Use of Technology

In 2003, Venkatesh et al. developed a built-in mannequin, namely the UTAUT model, which should account for 70% of the change in buyer intention. [8]. The consequences of that substantiated learn about proven the UTAUT mannequin was the most tremendous mannequin for inspecting technological know-how acceptance. This mannequin consists of 6 predominant structures, particularly overall PE, effort expectancy (EE), SI, FC, behavioral intention (BI) to use the system, and utilization conduct (see Figure 1). This mannequin includes 4 crucial identifying factors and 4 moderators: gender, age, experience, and willingness (see Figure 1).

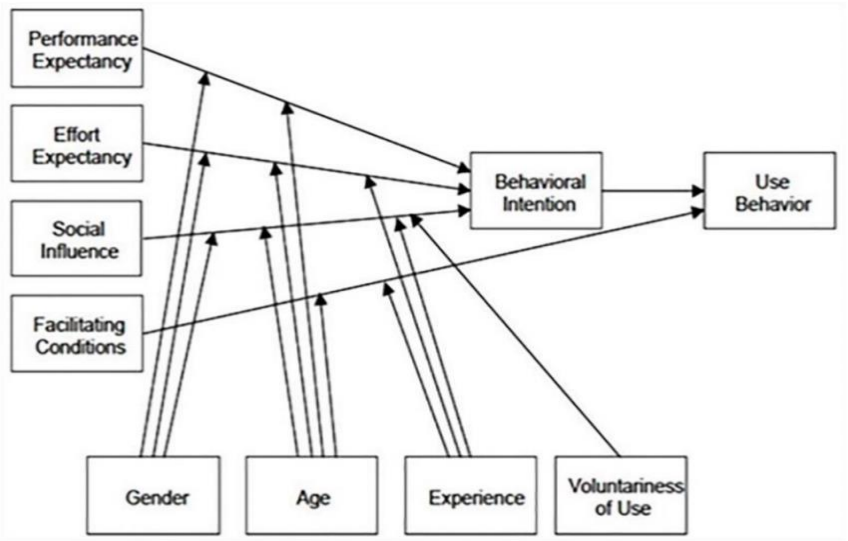

Figure 1: UTAUT model.

2.1.1. Performance Expectancy

Venkatesh and other researchers additionally indicated person adopts one machine primarily according to his appreciation of how it would assist enhance his/her overall manifestations in 2003 [8]. UTAUT mannequin presented a straightforward impact of BI on overall PE regarding the acceptance of the technology. On the other hand, countless research recognized the effective outcome of the assemble in indoctrination science receive for one consumer [7]. In line with this theory, the find out about assumes:

H1: There is a positive correlation between PE and Chinese university students' BI in MOOCs using.

2.1.2. Effort Expectancy

EE is considered the level of relief associated with the employment of this system [7]. UTAUT mannequin proposed a direct impact on the BI toward the overall EE regarding the acceptance of the technology. Usually reliable with the past discoveries that supplied its utilize within e-learning settings [7]. In correspondence to this speculation, the examiner sets:

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H2: There is a positive correlation between EE and Chinese university students' BI in MOOCs using.

2.1.3. Social Influence

SI is said to be the level of significance a person receives from people who boost the individual to the employment of this presented system. This impact is system-based and possibly application-based, while the subjective norms involved are related to non-systemic and non-specific behaviors [7]. Many studies pointed to the formation of SI as a result of subjective norms, such as these variables of image and MPCU derived from diffusion of innovation theory. In contrast to that theory, the study concludes:

H3: There is a positive correlation between SI and Chinese university students' BI in MOOCs using.

2.1.4. Facilitating Conditions

As highlighted by a range of theories, FC is said to be associated without hesitation with the utilization of the system. Thinking about FC is seen as a personal belief in the understanding of the organizational and infrastructural technology that complements the device [7]. The UTAUT mannequin proposes a direct effect of the BI closer to the FC regarding science adoption. Typically based on the previous discoveries that bolster its utilization within e-learning settings [7]. In contrast to the theory, the study hypothesizes:

H4: There is a positive correlation between FC and Chinese university students' BI in MOOCs using.

2.1.5. MOOCs' BI

Recounted considers figured out show of the UTAUT theory highlighted 26% changes within the behavioral purposeful [8]. Botero and alternative researchers have extended the UTAUT model by group action perspective within the model that changes the BI increased to 54%. Those researchers stated the requirement to conform the perspective variable within the model for rising its clarification capability. Later on, the model would improve the suitable performance of MOOCs within the e-learning context. Some researchers aided its effectiveness in enhancing the adoption of the science [9]. In contrast to the theory, the study hypothesizes:

H5: There is a positive correlation between BI and Chinese University students' MOOC usage.

2.1.6. MOOCs' Usage

Like early behavioral science, the application of behavioral science is not characterized by the demonstration advancement of UTAUT. Using behaviors reflected in the real TRA model and considering improvements in the TAM framework, Davis and others presented a generalization of the TRA model to examine countless human behaviors.[9]. The wide variation in behavior makes it well suited to investigate the factors that determine particular situations, such as the behavior of computer use. Venkatesh utilized the definition of utilization behavior in TRA when considering the UTAUT hypothesis, which this consider kept on utilizing [8].

2.2. Academic Self-efficacy (ASE)

Self-efficacy (SE) measures the capacity of a person to present a specific assignment by utilizing innovation [7]. Numerous research has indicated they have an effect on SE on EE closer to accepting technological know-how [9,10]. SE used to be tested as a vast predictor for EE toward shoppers' acceptance intention of the science of the Internet [9]. Also, Balkaya and Akkucuk confirmed the

DOI: 10.54254/2753-7048/6/20220353

effect of SE on the purposefulness of buyer selection for learning management frameworks. In every other lookup work, Shiferaw and other researchers discovered SE to be extensively influencing EE [10].

The research object of this study is contemporary Chinese college students, and the participation of MOOCS is mainly for academic improvement. Therefore, this study utilizes ASE as the research variable. ASE is the embodiment of SE in the learning domain believed that ASE refers to the belief that one can accomplish a specific level of the learning task, mainly in two aspects: SE of learning ability and SE of learning behavior [11]. Understanding potential SE refers to the judgment and self-beliefs of individuals about their ability to complete their studies correctly, recognize the exact effects and avoid tutoring failure. SE of mastery behavior is defined as the judgment and self-beliefs of individuals about whether they can adopt active knowledge acquisition strategies to obtain mastery goals.

Studies have found that ASEs affect participation in learning and persistence of learning in a variety of settings, particularly in e-learning. Several studies have demonstrated that mentored SE has a significant impact on the acquisition of knowledge and understanding of the persistence of participation. Several studies emphasize the importance of educating SEs in the learning process, such as engagement in knowledge acquisition in MOOCs, and these guidelines emphasize the autonomy of the MOOC learner and provide a greater path than a simple lecture [12].

3. Method

3.1. Research Design and Measures

Considering the investigation destinations, an internet-organized survey was propelled in eight open colleges in China. This finds out about focuses on MOOC participation intention and participation conduct in Chinese universities. This learning about exploited the comfort sampling method as comfort sampling is a wonderful technique to gather data in a well-timed manner [10,12]. Further, comparable lookups additionally used comfort sampling often.

This study referred to Wang and Mao's MOOC learning behavior questionnaire based on the UTAUT theoretical model, User acceptance of information technology questionnaire, and Pintrich’s academic self-efficacy questionnaire. A MOOC participation questionnaire was designed for contemporary Chinese university students, with 49 questions, including:

(1) Basic information of students: 4 questions were set, which mainly investigated the basic information of students, including gender, age, grade, and major.

(2) Factors influencing MOOC participation behavior. A total of 18 questions were set, specifically based on the measurement dimensions of PE, EE, SI, and FC. Among them, 3 questions were set for performance expectation, 4 questions for effort expectation, 5 questions for surrounding influence, and 6 questions for contributing factors.

(3) The intention to use MOOC was set up with 3 questions.

(4) Use of MOOC, 2 questions were set, mainly asking whether the subjects had participated in MOOC and how often they used it.

(5) Academic self-efficacy, with 22 questions and 2 dimensions (SE of learning ability and SE of learning behavior).

All questions were scored on a 5-point scale, except for students' their native information and actual use of the MOOC.

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3.2. Analysis of Data

This information was analyzed using IBM SPSS (Factual Bundle for Social Sciences) 26.0 tables. This study used descriptive statistics for categorical factors, while progressive measurable tests were used for unfastened factors (relationship and multiple recurrence surveys).

4. Results

4.1. Survey Scale Reliability and Availability Test

This investigation is based on the Chinese International General Scale. Previous research revealed that these scales have been widely applied to diverse studies on multiple groups of people. According to Table 2, Cronbach's α coefficient of scales in this research all >0.750, hence, the availability and reliability are effective.

Table 2: The reliability and availability test of the UTAUT model.

Scale	quantity	Cronbach'sα
PE	3	0.857
EE	4	0.863
SI	5	0.882
FC	6	0.766
BI	3	0.879
ASE	22	0.901

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4.2. Demographic Variable

This study collected 254 questionnaires from the Communication University of China, Nanjing; China Pharmaceutical University; Hebei University of Science & Technology; Shanxi University of Finance and Economics; Shandong University; Tianjin University. There were 247 valid questionnaires, namely, the valid proportion was 97.2%. There were 106 men and 141 women in total with an average age of 22. The other demographics are in the Table 3 below:

Table 3: respondents' demographics.

variable	category	group	quantity	Proportion(%)
gender	demographic	male	106	42.9
		female	141	57.1
age		18-21	126	51
		22-25	111	44.9
		26 and above	10	4
grade		doctorate	10	4
		sophomore	55	22.3
		junior	60	24.3
		senior	44	17.8
		freshman	30	12.1
		Master degree	48	19.4
major		engineering	32	13
		Science	102	41.3
		Humanity	78	31.6
		Art	35	14.2
Participation frequency		Once a quarter	31	12.6
		Once a year	51	20.6
		Once a day	26	10.5
		Once a month	38	15.4
		Once a week	101	40.9

4.3. Correlation Regression Analysis between Chinese University Students' PE/ EE/ SI /FC and BI

According to table 4, PE and BI of Chinese university students have a positive relation (P <0.01); EE and BI have a positive relation (P <0.01); SI and BI have a positive relation (P <0.01); FC and BI have a positive relation (P <0.01). Therefore, the H1, H2, H3, and H4 are valid. Besides, All 4 factors have PCCs> 0.3, among which SI has the greatest PCCs. Thus, SI influenced Chinese university students' behavioral intentions most strongly.

Table 4: The PCCs and significances of PE/ EE/ SI/ FC.

Scale	PCCs	Significance
PE	.383**	0.000 P <0.01
EE	.437**	0.000 P <0.01
SI	.540**	0.000 P <0.01
FC	.428**	0.000 P <0.01

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4.4. Correlation Regression Analysis between BI and Usage

According to table 5, Chinese university students' BI and usage have a positive relation, (P <0.01); BI and frequency have a positive relation (P <0.01). Therefore, BI and MOOCs' usage have a positive relation. The H5 is valid.

Table5: PCCs and significances of BI and usage.

Scale		BI
MOOCs courses that the respondents have participated in	PCCs	.262**
	sig	.000
MOOCs learning frequency	PCCs	.213**
	sig	.001
FC	PCCs	.428**
	sig	.000

4.5. Analysis of Academic Self-efficacy's Moderating Role on Influencing Factors and BI

After the introduction of ASE as the control variable and demographic factors as control variable, the regression analysis was executed. Through table 6 and table 7, it was observed that the R square increased to 0.068 and passed the F test.

Table 6: Regression analysis with ASE.

Model	R	R square	Adjusted R square	Error in standard estimation	R square change	F charge	df1	df2	Sig. F charge
1	.175a	0.031	0.015	0.929700004	0.031	1.913	4	243	0.109
2	.609b	0.371	0.35	0.755035198	0.341	32.358	4	239	0
3	.662c	0.439	0.407	0.720919752	0.068	5.631	5	234	0

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Table 7: ANOVAa analysis.

Model		quadratic sum	freedom	mean square	F	p
1	regression	6.613	4	1.653	1.913	.109b
	residual	210.035	243	0.864		
	total	216.648	247			
2	regression	80.4	8	10.05	17.629	.000c
	residual	136.249	239	0.57		
	total	216.648	247			
3	regression	95.033	13	7.31	14.066	.000d
	residual	121.616	234	0.52		
	total	216.648	247			

By analyzing table 8, it is found that the introduction of ASE has the most significant effect on the regulation of PE and EE (p equaled 0.006 and 0.001 respectively), and RQ1 was verified.

Table 8: Significance test of model coefficient.

Model		B	Standard error	Beta	t	p
1		4.681	0.582		8.046	0
	gender	-0.096	0.132	-0.051	-0.728	0.467
	grade	0.008	0.038	0.014	0.216	0.829
	age	-0.14	0.264	-0.035	-0.53	0.597
	major	-0.152	0.074	-0.145	-2.056	0.041
2		4.265	0.477		8.942	0
	gender	0.045	0.11	0.024	0.408	0.684
	grade	-0.047	0.031	-0.083	-1.506	0.133
	age	-0.056	0.216	-0.014	-0.259	0.796
	major	-0.068	0.061	-0.065	-1.114	0.267
	c_pe	0.15	0.059	0.155	2.551	0.011
	c_ee	0.148	0.078	0.13	1.91	0.057
	c_si	0.377	0.063	0.387	6.025	0
	c_fc	0.115	0.085	0.091	1.35	0.178
3		4.169	0.465		8.972	0
	gender	0.108	0.107	0.057	1.009	0.314
	grade	-0.047	0.03	-0.082	-1.559	0.12
	age	-0.059	0.208	-0.015	-0.284	0.777
	major	-0.067	0.06	-0.063	-1.116	0.265
	c_pe	0.093	0.058	0.096	1.593	0.112
	c_ee	0.208	0.077	0.184	2.713	0.007
	c_si	0.349	0.065	0.358	5.392	0
	c_fc	-0.008	0.087	-0.007	-0.095	0.924
	c_ase	0.326	0.093	0.204	3.516	0.001
	c_ase_pe	0.285	0.103	0.195	2.78	0.006
	c_ase_ee	-0.449	0.14	-0.284	-3.213	0.001
	c_ase_si	0.027	0.099	0.019	0.27	0.787
	c_ase_fc	0.018	0.137	0.01	0.133	0.895

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4.5.1. Analysis of Academic Self-efficacy's Moderating Role on Influencing Factors between PE and BI

From Figure 2, it can be found that the effect of PE on BI is not linear under low academic self-efficacy, but the effect of PE on BI is significantly higher under the mediation of high self-efficacy.

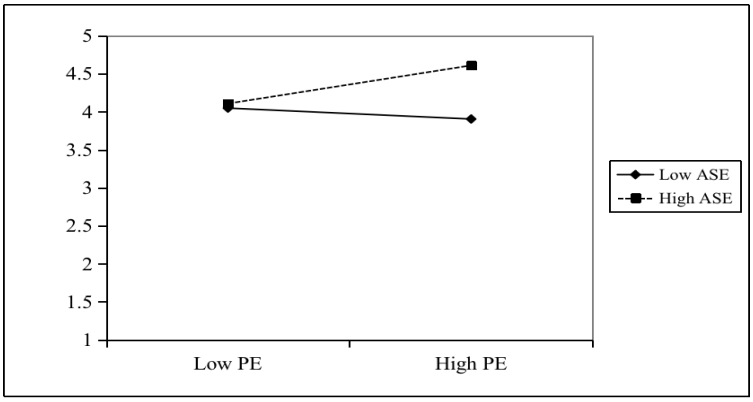

Figure 2: Academic self-efficacy's moderating effect between PE and BI.

4.5.2. Analysis of Academic Self-efficacy's Moderating Role on Influencing Factors between EE and BI

The opposite trend is found in figure 3, that is, under high academic self-efficacy, the influence of EE on Bi is not linear, but under the mediation of low self-efficacy, the influence of EE on BI is significantly increased.

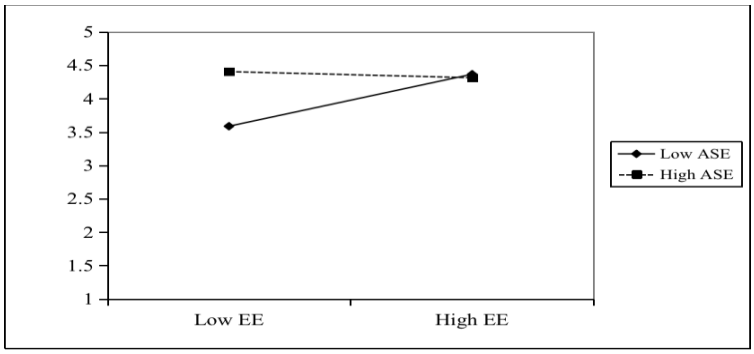

Figure 3: Academic self-efficacy's moderating effect between EE and BI

5. Discussion

The analysis of sample data characteristics, scale reliability, scale validity, and correlation regression proved that the survey was representative, credible, reliable, valid, and correct. This study sought to discover the following two issues: key factors influencing Chinese college students' intention to use MOOCs and the moderating influence of ASEs.

In this study, 4 core factors (PE, EE, SI, and FC) were identified as influencing the behavioral intention to participate in MOOC among contemporary Chinese college students, which benefited students' intention of using MOOC. Past thinks have appeared that execution hope, exertion anticipation, and social impact had an impact on behavioral purposeful [8]. This finds out about demonstrates the current lookup conclusions from a new viewpoint which overall PE, EE, SI, and FC have a high-quality effect on students' BI to use the MOOC route in the course of the mastering

DOI: 10.54254/2753-7048/6/20220353

process. From the result, this study detects that students like to use MOOC platforms that are easy to operate, have a clear course structure, and have rich and easy-to-use supporting learning content. At the same time, convenient MOOC learning conditions and preferential teaching policies will enhance students' motivation to learn MOOCs. Meanwhile, as this study indicates that social influence has a significant influence on Chinese contemporary college students' choice to participate in MOOC learning, the good atmosphere of the surrounding students using MOOC platform will promote students' use of MOOC platform. The positive atmosphere around students using MOOC platforms will promote students' motivation to use MOOC platforms. In conclusion, rich MOOC teaching courses and supporting resources, clear course structure, simple and convenient operation functions, good online learning atmosphere, convenient and favorable conditions and policies, and so on. These factors all boost students' willingness to use MOOC platforms and ultimately promote students' use of MOOC effectively.

The current investigation found that ASE as a moderator greatly influenced the relationship between EE and intentional use of MOOCs, which improved the impact of UTAUT on the behavior of intentional use of MOOCs. This study discovered that high ASE enhances the effect of effort expectation on intention to use MOOCs. Studies by Pajares and Shi et al. anticipated that ASE is considered a non-intellectual factor that affects academic performance and plays an important role in student learning and that academic self-efficacy has a motivational function that increases students' commitment to learning, motivates them to study hard and solve problems positively, and influences which learning behaviors they choose [13]. Students with high ASE have high self-confidence in their learning, believe they are capable of learning tasks, have a better grasp of learning tasks, and can expand their knowledge and exercise their abilities through learning, which further demonstrates their learning abilities. Therefore, college students with high ASE have higher initiative in learning tasks, such as higher effort and persistence in learning, and higher commitment to learning. This also confirms the assumption of this study that students with high ASE need to pay more effort into the process of using MOOCs, and high EE will also enhance students' willingness to use the MOOC platform. MOOC courses, as an online learning mode, are also essentially learning tasks for college students, and the results of this study confirm the prevalence of the moderating role of ASE in MOOC learning.

6. Conclusion

Based on the UTAUT theory, this paper conducted a study on eight comprehensive universities in China. Third, it was found that ASE and EE played a moderating role in influencing college students' intention to use MOOCs. Based on the above findings, this paper gives suggestions for institutions and course designers who deliver courses to more precisely attract college students to use MOOC platforms for learning.

This inquiry about contributed to writing successfully both from hypothetical and viable angles. Theoretically, this study further validates the impact of UTAUT theory on MOOC participation intention and actual use, demonstrating that PE, EE, SI, and FC had a significant positive correlation with MOOC use intention. Also introducing ASE as a moderating factor demonstrates that academic self-efficacy also plays a moderating role between EE and MOOC usage behavioral intention.

This learn about gives crucial coaching for builders and direction builders of big open online publications who must enhance their UTAUT influences to impact users' intention to use MOOCs, such as these EE can be multiplied using growing an effortless interface that is convenient to use and SI can be elevated by way of scheduling specific on-line activities on social media, such as on-campus bulletin boards and campus networks and so on. Secondly, considering the moderating role of ASE, developers and course researchers can conduct profiling and targeted research for different student clients, and targeted impact for students with different academic self-efficacy.

DOI: 10.54254/2753-7048/6/20220353

This investigation is not free from restrictions and gives imperative rules for researchers to explore the subject in future investigations. To begin with, this ponders utilized comfort examining in information collection. In this manner, future analysts ought to apply irregular examination with a bigger test estimate to generalize the discoveries. Second, this study took a cross-sectional sample, which can only prove a correlation between variables, not causality, and suggests that subsequent MOOC studies can be observed on an ongoing basis.

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