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A Study Examining Undergraduate Students' Satisfaction and Continuance Intention with E-learning in Beijing, China

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Abstract

Purpose: This study investigates the factors impacting undergraduate students' satisfaction and continuance intention with e-learning in Beijing, China. The main theories were Information Systems Success Model (ISSM), Expectation Confirmation Theory (ECT), and Technology Acceptance Model (TAM). Perceived usefulness, confirmation, satisfaction, system quality, information quality, service quality, and continuance intention were all interconnected in the conceptual framework. **Research design, data, and methodology:** 479 questionnaires were completed by students in the four departments of the Beijing Film Academy. The study employed three sampling techniques: purposive sampling, quota sampling, and convenience sampling. To ensure content validity, the index of item-objective congruence (IOC) was utilized, along with a pilot test involving a sample of 50 participants, and the reliability of the measurements was assessed using Cronbach's alpha coefficient. Additionally, confirmatory factor analysis (CFA) and structural equation modeling (SEM) were employed to analyze the data and generate the findings. **Results:** All eight hypotheses proposed in the study were supported. Confirmation has a significant impact on perceived usefulness. Perceived usefulness, confirmation, system quality, information quality, and service quality significantly impact satisfaction. Perceived usefulness and satisfaction significantly impact continuance intention. **Conclusions:** College teaching practitioners should focus to enhance e-learning's efficiency and student's motivation to continue using online education appropriately.

Keywords : E-learning, Satisfaction, Continuance Intention, System Quality, Information Quality

JEL Classification Code: E44, F31, F37, G15

1. Introduction[1]

E-learning, which originates in distance learning, results from the revolution brought on by new internet media. Educators and trainers quickly recognized the promise of new internet technologies to speed up learning. In order to facilitate learning, professors and higher education institutions are gradually incorporating e-learning components into their teaching techniques. (Crawford & McKenzie, 2011). "e-learning" refers to educational experiences, resources, or activities that are somehow given electronically. (Sharifabadi, 2006). E-learning is great for professionals since it may increase the flexibility and

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scalability of their learning process. (Cheng, 2020).

Several media outlets referred to 2013 as "the first year of online education in China." New products, improvements to existing ones, and initiatives to bring offline learning online are all rapidly expanding in the online education market. Industry counsel has continually gotten better. My country recently prioritized modernizing education and has been aggressively pushing the expansion of online learning through policy documents. The regular teaching schedule has essentially been restored, and online education has declined, thanks to the effective breakthroughs in epidemic prevention and control at universities, secondary schools, and elementary schools in the second half of 2020. According to the NetEase E-Commerce Research Center's "Investment and Financing Information for China's Online Education in 2020," there were 111 online education financings in China in 2020, with more than 53.93 billion yuan in funding in total, surpassing the funding from 2016 to 2019. As online education becomes the norm, society's demand for learning platforms, resources, and tools will only increase. During the outbreak, the Ministry of Education created 22 platforms for online learning, offering free open course materials for online instruction in colleges and institutions. 24,000 MOOCs, SPOCs, and practical virtual simulation courses were housed on these websites. (CCTV, 2020).

The differences in each student's talents are less apparent in the face-to-face offline classroom education system, where teachers take on a more significant role, and students are more passive consumers of knowledge. (Zhu & Dong, 2022). The student influences learning results most, whereas course material and design influence learning satisfaction. (Wang & Li, 2020). In light of the above factors, this study offers significant research value for assessing the satisfaction and continuance intention of students with e-learning in the Beijing, China, based on the main theories: Information Systems Success Model (ISSM), Expectation Confirmation Theory (ECT), and Technology Acceptance Model (TAM).

2. Literature Review

2.1 Online Education of China

After the new crown pneumonia broke out in 2020, many schools were shut down, and most students used online learning to finish their homework at home. China places a high priority on modernizing education, encourages online learning, and pushes for the change of traditional educational approaches by incorporating and using scientific and technical advancements in the classroom. Increase the rate at which online education develops. The need for learning resources, platforms, and technologies will increase as online education becomes the norm. Teachers' teaching and students' learning strategies continually evolve and innovate toward technological personalization, content specialization, and product enrichment, driven by market demand in online education. During the outbreak, the Ministry of Education created 22 platforms for online learning, offering free open course materials for online instruction in colleges and institutions. 24,000 MOOCs, SPOCs, and practical virtual simulation courses were housed on these websites. (CCTV, 2020). Off-campus educational institutions swiftly switched from offline to online instruction during the containment and prevention of COVID-19.

2.2 Technology Acceptance Model (TAM)

The technology acceptance model (TAM) describes how consumers adopt and use technology and is a perspective of information systems. When a system is truly in use, people use the technology. People utilize technology for various reasons, including changing their behavior. The general view of technology affects behavioral intention (BI), which impacts behavior (A). The following factors, among others, impact users' decisions on when and how to use new technology. " How strongly an individual who convinced that utilizing the specific innovation information system would facilitate him or her extent of working performance." according to Davis, was the definition. Whether or not a person can perceive. In Davis's words, the degree to which one believes that adopting a specific system would be straightforward. (Davis, 1989). TAM is an instrument widely used to study how technology is applied in the field of IS. (King & He, 2006). Its creators believed that the way to increase the use of information technology was first to raise acceptance levels, which could be determined by asking people about their plans to use it in the future. If organizations were aware of the factors that affected people's intentions, they could change these features to promote acceptability, which would lead to an increase in the usage of information technology. Early TAM research demonstrated that three criteria are needed to explain, predict, and regulate acceptance. The final version of the model was developed by modifying a basic social-psychological/behavioral theory known as the Theory of Reasoned Action, which has been demonstrated to be useful for evaluating various activities, such as exercising, voting, and condom use.

2.3 Information Systems Success Model (ISSM)

Delone and McLean's IS Success Model, also known as the information systems success model, is an information systems (IS) concept that aims to clarify the relationships between the six key success indicators that are frequently considered when evaluating information systems in order to

provide a comprehensive understanding of IS success. According to Davis (1989), it will be seen that the TAM is commonly used in the literature promoting the success of information systems when the research on technology acceptance is considered. The integrating concept of technology adoption and application and the diffusion of innovation principle (Rogers, 2016). The factors that affect an information system's effectiveness are made clear by this model. Based on 2003 evaluations such as DeLone and McLean's models, the model's six interconnected components are system quality, utilization, information quality, technical service quality, net benefit, and user satisfaction. It is still believed that this variable can be addressed under the category of educational quality, even though many studies argue that it should be treated as an independent variable due to the growing significance of online education systems in recent years. (Wang et al., 2017). System usage is the volume, frequency, and purpose of user engagement with an information system. Users' judgments of how well their requirements, aims, and desires are met when utilizing an educational system and their level of satisfaction with the system's assistance and services are communicated. (Petter & McLean, 2009). Not many studies use both models at once, even though the ISSM and TAM are commonly employed independently in research examining Internet-based distance education systems.

2.4 Expectation Confirmation Theory (ECT)

The ECT, which considers expectations, perceived performance, and disbelief confirmation, is a theory that explains why things are enjoyable after being bought or adopted. Two works by (Oliver, 1977, 1980), laid the premise's foundation. The theory was initially explored in the literature of psychology and marketing. However, it has since acquired recognition in several other scientific domains, including information systems and survey research. Confirmation is a term used to describe how closely individuals believe a technology performs to their expectations. (Bhattacherjee, 2001). " How much someone thinks using a certain technology would improve their effectiveness at work " is defined by PU (Davis, 1989). When measuring information asymmetry cognitively, "satisfaction" referred to a mental or emotional state connected to and triggered. (Bhattacherjee, 2001). Confirmation is the extent to which users perceive a technology to perform following their expectations. (Bhattacherjee, 2001). According to Davis (1989), Users' perceptions of the anticipated benefits of using information technology are related to perceived utility (PU). It alludes to "the extent to which the individual believes that using a particular technique would increase their likelihood of working success," as stated in the definition. One of the main assumptions in the technology acceptance paradigm for figuring out why people adopt a particular kind of system is PU. (Bhattacherjee, 2001). It is anticipated that this will have a positive impact on the PU of system users. As a result, the advantages of using an e-learning platform will be satisfactorily evaluated. (Cheng, 2014).

2.5 Confirmation

Confirmation is "the extent to which users perceive that a system or technology meets their original expectations of it during actual usage, which impacts perceived usefulness (similar to performance expectations) and together influences satisfaction, which in turn influences intentions for information system persistence." (Cheng, 2014). According to Cheng (2020), in a cloud-based environment, customers' confirmation of cloud computing service expectations can influence their satisfaction with the service when they successfully obtain the anticipated benefits from their use of cloud computing services.

Students' initial assumptions about their ability to learn through blogs are validated after using these tools, boosting their receptivity to this teaching strategy. (Ifinedo, 2017). Confirmation may facilitate the usage of online learning platforms, according to a 2015 proposal by (Ifinedo, 2017). its recognition of the learning system's capacity to enhance student perception and foster student motivation in the following years. The paper by Caner and Servet (2020) to identify the crucial impact of pleasure on the successful usage of learning systems used positive self-affirmation generated from optimistic expectations as a major component. Hossain et al. (2020) later proved the underlying significance of confirmation for online learning. In their works this year, relevant experts have also exploited the idea that e-learning systems can increase learning effectiveness and excitement in higher education. (Joo & Choi, 2016). Hence, two hypotheses are set:

H1: Confirmation has a significant impact on perceived usefulness.

H4: Confirmation has a significant impact on satisfaction.

2.6 Perceived Usefulness

Perceived usefulness is recognized as one of the critical factors with a significant direct impact on student satisfaction in higher education institutions that use online databases and wireless internet technologies for research and learning purposes. How wireless Internet use is viewed as valuable and simple directly impacts student achievement. (Islam et al., 2018). The perceived utility is a major motivator of exploitative action and intent. Perceived usefulness is defined as the "degree to which one believes that adopting a particular system will improve its

performance." (Kashive et al., 2020).

Many academics nowadays have repeatedly demonstrated how perceived utility directly affects e-learning satisfaction and persistent intention. According to Mouakket and Bettayeb (2015) analysis of the Blackboard system, widely used in practical teaching at colleges and universities, a professor's willingness to use technology in long-term training depends on how valuable they believe it to be. The willingness of a user to use persistent e-learning systems is influenced by perceived usefulness. The degree to which the learners are actively engaged and find their jobs interesting may determine how effective the e-learning system is. An important indicator of students' satisfaction with an e-learning strategy is how valuable they find it. (Cheng, 2019). Therefore, the researcher hypothesizes that:

H2: Perceived usefulness has a significant impact on continuance intention.

H3: Perceived usefulness has a significant impact on satisfaction.

2.7 System Quality

Reader satisfaction is significantly influenced by system quality. Enhances reader satisfaction with the system by simplifying the aspects influencing reader contentment. (Chen et al., 2015) Masrek and Gaskin (2016) also advanced the idea that system quality is a key indicator of users' satisfaction with deep learning in the network. Helps the system's long-term continuous use. People's pleasure with using hybrid e-learning systems is explained by the large contribution that system quality makes to perceived usefulness validation and process. (Cheng, 2014). System and information quality, both individually and jointly, have an impact on utilization and user satisfaction. (Hassan et al., 2014). Employees' willingness to adopt e-learning systems may be further increased by requiring system quality as a condition of acceptance. (Cheng, 2012).

System quality plays a significant role in determining users' willingness to use e-learning systems and their level of satisfaction with their educational experience. Many academics have thoroughly discussed this point of view. Rui-Hsin and Lin (2018) noted that system quality could enhance users' perceptions of e-learning's utility, raising their satisfaction. Meanwhile, research has shown how the system's quality affects different groups of people's contentment. Many academics have hypothesized that system quality favors the happiness of users with varied identities, such as students, employees, and readers. Thnayan and Husain (2021)study covered the effect of e-learning systems on student satisfaction and made the case that system quality can raise student satisfaction. According to Chen et al. (2015), system quality requires employees to embrace e-learning and influences their willingness to use e-learning systems. In another study, he also indicated that system quality substantially impacts reader satisfaction. (Chen et al., 2015). Thus, this study can conclude a hypothesis:

H5: System quality has a significant impact on satisfaction.

2.8 Information Quality

According to Cheng (2014) research, information quality significantly influences how users assess the relevance, validity, and fluidity of e-learning systems. It illustrates how the efficacy of an information system may be evaluated using three factors: information quality, system quality, and service quality. Information quality significantly impacts reader satisfaction, which also reflects how satisfied the reader is with the system. Other processes cannot influence learning; thus, users must prioritize the system's quality, the information, and the services. (Chen et al., 2015). There is compelling evidence connecting the quality of the information to learner system satisfaction. (Albelbisi et al., 2021). Additionally, Rughoobur-Seetah and Hosanoo (2021) proposed that improved information quality increases utility and enjoyment. The use of an e-learning platform will be preferred by students who gain from it.

Information quality has an impact on both usage and user satisfaction. Additionally linked are user satisfaction and usage (Hassan et al., 2014). The quality of the information has an impact on user satisfaction with computerized assessment systems. The performance of an information system in this regard also heavily depends on the quality of the information. (Bello & Abdullah, 2021). The e-learning system's information quality and user happiness had a positive association that was fully reflected. (Albelbisi et al., 2021). Following Chopra et al. (2019), the caliber of the content in the e-learning system was advantageous for students' satisfaction with the system and continued use of this mode of learning. Accordingly, a hypothesis is indicated:

H6: Information quality has a significant impact on satisfaction.

2.9 Service Quality

Service quality greatly impacts user satisfaction, which boosts system quality satisfaction. Rapidly and aid readers in comprehending the system (Chen et al., 2015). Service quality refers to how well a service meets the needs or expectations of a consumer. Improved client loyalty is aided by superior service. Additionally, raise reputation and customer happiness. Students can keep taking the desired online courses because of the high quality of service. (Dehghan et al., 2014). According to the notion put up by Ching et al. (2021), the effects of the system and service quality on learning outcomes are believed to be moderated

by student pleasure.

The phrase "quality of service" refers to the difference between the system's anticipated level of service quality and the actual degree of perceived quality. Concreteness, dependability, receptivity, assurance, and empathy are all covered. Users who experience higher levels of service quality are more likely to accept perceived usefulness. (Rui-Hsin & Lin, 2018). The findings of Thnayan and Husain (2021) supported the notion that service quality influences student satisfaction in a good way. They were assessed based on how tech assistance satisfied students' expectations, contributed to metrics creation, and answered their queries effectively. In order to improve students' well-being, services must be of a high caliber and offer something special or extra at the end. Masrek and Gaskin (2016) pointed out that service quality is linked to satisfaction and user benefits and positively influences usage intention. Consequently, a hypothesis is proposed:

H7: Service quality has a significant impact on satisfaction.

2.10 Satisfaction

According to research by Al-hawari and Mouakket (2010), employee satisfaction is believed to impact performance in the current competitive environment significantly. E-satisfaction is the term used to describe a user's evaluation of their entire online experience over time. Satisfaction with e-learning has a good and significant impact on students (Feng et al., 2022). Students are more satisfied with e-learning platforms as their knowledge and skills grow. (Salimon et al., 2021). The satisfaction of students with an e-learning system promotes its use. Without first feeling fulfilled, sustained intention cannot exist. (Cheng, 2018).

Student loyalty is becoming increasingly important for educational institutions working in higher education. Student loyalty is influenced by student satisfaction and university performance, which were examined in the context of customer satisfaction and service quality. There was discovered to be a positive relationship between educational institution success and student loyalty. (Dehghan et al., 2014). Online learning happiness was emphasized as a critical component in a highly competitive environment for student achievement as early as 2010. E-satisfaction measures a user's overall satisfaction with their online experience over time. (Al-hawari & Mouakket, 2010). Higher education prioritized student satisfaction with systematic learning as a requirement for deciding their long-term plans. (Islam et al., 2018). Subsequently, a hypothesis is developed:

H8: Satisfaction has a significant impact on continuance intention.

2.11 Continuance intention

The subjective likelihood of someone's ongoing knowledge-sharing is determined by their assessment and emotional response to their entire information-sharing experience, known as continuing intention. (Chiu et al., 2011). Cheng (2020) found that users continue to indicate purpose after accepting an e-learning system. According to them, it could increase learning effectiveness. Employ e-learning packages as usual. The perceived value of the hybrid e-learning system to the nurses was also underlined by Cheng (2014b), who found that both the nurses' propensity to utilize the system in the future and their satisfaction with it are significantly influenced by it. The quality of the resources greatly impacts how long an intention lasts.

Usefulness and validation have a favorable direct and indirect impact on continuous intention. (Joo & Choi, 2016). In order to continue utilizing the system, perception should make it simpler to understand users' ongoing intentions. (Mouakket & Bettayeb, 2015). In order to create a research model and investigate the motivations underlying continuance intention, Chiu et al. (2011) employed quantitative research techniques. Playfulness in the learning process was cited in the research as a crucial element for ensuring that members of virtual communities-maintained continuance intention and high satisfaction. Additionally, a top-notch online learning environment significantly impacts the degree to which students will continue to use electronic learning. (Cheng., 2014). Based on this, Hossain et al.'s qualitative comparative analysis of fuzzy sets for adult learners utilizing mobile learning in 2020 and Cheng (2019) research on e-learning both expressed the feelings of past users of the learning system and their satisfaction and continuation intentions with the learning system.

3. Research Methods and Materials

3.1 Research Framework

A conceptual framework describes a specific area of academic research that a researcher wants to look into or study. An analytical tool with multiple functions is a conceptual framework. It can be used in many contexts where a complete picture is required. It helps arrange concepts and creates mental distinctions. An accurate representation of something real in a form that is simple to remember and use is what makes a conceptual framework effective. (Rogers, 2016). The conceptual framework's base is the ISSM, which DeLone and McLean devised in 2003. The conceptual framework was created based on these components, as illustrated in Figure 1..

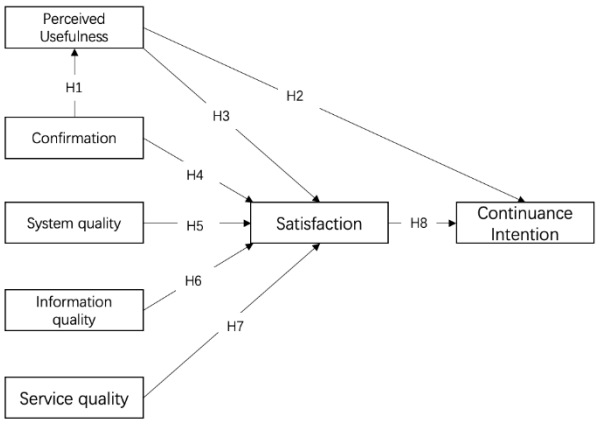

Figure 1: Conceptual Framework

H1: Confirmation has a significant impact on perceived usefulness.
H2: Perceived usefulness has a significant impact on continuance intention.
H3: Perceived usefulness has a significant impact on satisfaction.
H4: Confirmation has a significant impact on satisfaction.
H5: System quality has a significant impact on satisfaction.
H6: Information quality has a significant impact on satisfaction.
H7: Service quality has a significant impact on satisfaction.
H8: Satisfaction has a significant impact on continuance intention.

3.2 Research Methodology

This study aims to identify the factors that impact the satisfaction and long-term intention of Beijing Film Academy undergraduate students majoring in directing, performing arts, photography, and scriptwriting to pursue online education. This study employed the quantitative survey method because it was the most effective way to learn about students' attitudes and evaluate their psychological responses.

The questionnaire comprised three main components: a screening question, demographic data, and variables connected to the conceptual framework's seven latent variables. As a tool for quantitative data collection, the questionnaire was used. In the definition provided by Malhotra et al. (2010), a survey is a set of inquiries made to obtain information from a particular population. Check and Schutt (2012) further described the questionnaire as a tool that consisted of self-administered survey questions and gave participants the results. Moreover, the researchers conducted 3 projects to determine the student's demographic information, such as gender, age, and major.

Additionally, 26 scale items from prior research were used to assess latent variables, including 4 items related to perceived usefulness, 4 items related to satisfaction, 3 items related to confirmation, 4 items related to system quality, 4 items related to service quality, 3 items related to information quality, and the final 4 items related to continuing intention. The researcher will use a five-point Likert scale to identify the factors influencing students' intention to continue with this doctoral thesis and their satisfaction with it. A Likert scale is a good instrument for assessing attitudes since it enables respondents to express how strongly they agree or disagree with a certain statement or set of assertions, according to Saunders et al. (2007).

Prior to data collection, the content validity of the study was assessed using the index of item-objective congruence (IOC). All scale items were subjected to evaluation by three experts, and items that received a score rating of 0.6 or higher were considered valid. Furthermore, a pilot test consisting of 50 participants was conducted, and the internal consistency of the items was examined using Cronbach's alpha coefficient reliability test. The results indicated that all items demonstrated strong internal consistency, with a value of 0.7 or higher (Nunnally & Bernstein, 1994).

3.3 Population and Sample Size

All undergraduates majoring in directing, performing arts, photography, and screenwriting at Beijing Film Academy make up the target group of this empirical study. Jackson (2001) suggested that between 400 and 800 instances would be the best sample size for model fit. 500 students, therefore, ended up being chosen as the final sample size following screening and quota selection.

3.4 Sampling Technique

The study employed three sampling techniques: purposive sampling, quota sampling, and convenience sampling. Purposive sampling was conducted by selecting undergraduates majoring in directing, performing arts, photography, and screenwriting at Beijing Film Academy. 500 respondents were subsequently chosen by quota sampling. For convenience sampling, the online questionnaires were distributed to students via the personnel of the target secondary college of Beijing Film Academy helped them complete the survey. After collecting the surveys, 479 were deemed legitimate, whereas 21 had invalid data.

Table 1: Sample Units and Sample Size

Educational Background	Subjects	Population	Proportional Sample Size
Undergraduate	Director	327	203
	Performing	276	172

Educational Background	Subjects	Population	Proportional Sample Size
	Photography	139	86
	Scriptwriter	62	39
Total		**804**	**500**

Source: Constructed by author

4. Results and Discussion

4.1 Demographic Information

Table 2 provides an overview of the complete demographic data for 479 respondents. Of all participants, there were 47.2% male pupils, and 52.8% female respondents. Students majoring in acting made up 32.8% of them, students majoring in photography made up 19.2%, and students majoring in screenwriting made up 8.6%. Students majoring in directing made up 39.5% of them. By age, those between the ages of 18 and 20 made up 54.3%, those between the ages of 21 and 22, 37.6%, and those between the ages of 23 and 24, 8.1%.

Table 2: Demographic Profile

Demographic and General Data (N=479)		Frequency	Percentage
Gender	Male	226	47.2%
	Female	253	52.8%
University	Director	189	39.5%
	Performing	157	32.8%
	Photography	92	19.2%
	Scriptwriter	41	8.5%
Age	18-20	260	54.3%
	21-22	180	37.6%
	23-24	39	8.1%

Source: Constructed by author

4.2 Confirmatory Factor Analysis (CFA)

The confirmatory factor analysis (CFA) method was used in this thesis. Confirmation factor analysis (CFA) was developed by Jöreskog (1969). Social science is where confirmatory factor analysis, a specific sort of factor analysis, is most frequently used. Table 3 shows that Cronbach's alpha coefficient reliability test indicated that all items demonstrated strong internal consistency, with a value of 0.7 or higher (Nunnally & Bernstein, 1994), the average extracted variance (AVE) values were all greater than 0,50, the composite reliability (CR) values were higher than 0,70, and the factor loading values were greater than 0.50. (Hair et al., 2015).

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 usefulness (PU)	Nagy (2018)	4	0.762	0.719-0.793	0.843	0.573
Confirmation (CON)	Cheng (2020)	3	0.728	0.709-0.766	0.772	0.531
Satisfaction (SA)	Salimon et al. (2021)	4	0.900	0.719-0.810	0.840	0.568
System quality (SYQ)	Cheng (2012)	4	0.756	0.728-0.791	0.840	0.569
Information quality (INQ)	Masrek and Gaskin (2016)	4	0.738	0.739-0.798	0.850	0.586
Service quality (SEQ)	Bello and Abdullah (2021)	3	0.788	0.752-0.779	0.810	0.587
Continuance intention (CI)	Cheng (2020)	4	0.733	0.706-0.803	0.828	0.546

Additionally, all applicable thresholds for the absolute fit indicators, such as CMIN/DF, GFI, AGFI, and RMSEA, as well as the incremental fit measurements, such as CFI, NFI, and TLI, are shown in Table 4 and meet the requirements. As a result, all the goodness of fit metrics used in the CFA evaluation were valid.

Table 4: Goodness of Fit for Measurement Model

Fit Index	Acceptable Criteria	Statistical Values
CMIN/DF	<3.00 (Hair et al., 2010)	1.524
GFI	>0.90 (Hair et al., 2010)	0.938
AGFI	>0.90 (Sica & Ghisi., 2007)	0.921
RMSEA	<0.05 (Pedroso et al., 2016)	0.033
CFI	>0.90 (Hu & Bentler, 1999)	0.973
NFI	>0.90 (Hooper et al., 2008)	0.926
TLI	>0.90 (Hair et al., 2010)	0.968
Model Summary		**In harmony with empirical data**

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, RMSEA = Root mean square error of approximation, CFI = Comparative fit index, NFI = Normed fit index, and TLI = Tucker–Lewis index.

Table 5 illustrates the outcomes of the inquiry into and presentation of the discriminant validity. Neither of the correlations crossing any two latent variables was greater than 0.80, and the diagonally specified quantity is the AVE square root of the AVE (Hair et al., 2015).

Table 5: Discriminant Validity

	SYQ	INQ	SEQ	CON	PU	SA	CI
SYQ	**0.754**						
INQ	0.216	**0.766**					
SEQ	0.239	0.202	**0.766**				
CON	0.119	0.197	0.246	**0.757**			
PU	0.271	0.125	0.314	0.358	**0.754**		

	SYQ	INQ	SEQ	CON	PU	SA	CI
SA	0.354	0.399	0.393	0.387	0.490	**0.739**	
CI	0.405	0.445	0.378	0.416	0.486	0.492	**0.729**

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

4.3 Structural Equation Model (SEM)

This study followed the CFA assessment by the structural equation model (SEM) verification. SEMs are distinct from earlier modeling techniques in examining the direct and indirect impacts on a set of a priori causal relationships. (Wright, 1920). The total values of CMIN/DF, GFI, AGFI, CFI, NFI, TLI, and RMSEA were all above permissible limits when corrected using AMOS version 24, as shown in Table 6. As a result, demonstrates the SEM's goodness of fit was established.

Table 6: Goodness of Fit for Structural Model

Index	Acceptable Criteria	Statistical Values
CMIN/DF	<3.00 (Hair et al., 2010)	1.872
GFI	>0.90 (Hair et al., 2010)	0.923
AGFI	>0.90 (Sica & Ghisi., 2007)	0.905
RMSEA	<0.05 (Pedroso et al., 2016)	0.043
CFI	>0.90 (Hu & Bentler, 1999)	0.954
NFI	>0.90 (Hooper et al., 2008)	0.907
TLI	>0.90 (Hair et al., 2010)	0.947
Model Summary		**In harmony with empirical data**

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, RMSEA = Root mean square error of approximation, CFI = Comparative fit index, NFI = Normed fit index, and TLI = Tucker–Lewis index

4.4 Research Hypothesis Testing Result

According to the results shown in Table g, CON has a significant positive correlation with PU, and its standardized coefficient is 0.388 (t-value = 6.506***). The higher the CON, the higher the PU; There is a significant positive correlation, and its standardized coefficient is 0.297 (t-value = 5.215***). When the PU is higher, its CI is also higher; PU has a significant positive correlation with SA, and its standardized coefficient is 0.291 (t-value = 5.439***); when the PU is higher, its SA is also higher, CON has a significant positive correlation with SA, and its standardized coefficient is 0.181 (t-value = 3.16**), when CON The higher the value, the higher the SA; SYQ has a significant positive correlation with SA, and its standardized coefficient is 0.18 (t-value = 3.674***); the higher the SYQ, the higher the SA; SA has a significant positive correlation, and its standardized coefficient is 0.28 (t-value = 5.61***). When INQ is higher, its SA is also higher; SEQ has a significant positive correlation with SA, and its standardized coefficient is 0.185 (t-value = 3.655***); the higher the SEQ, the higher the SA; SA has a significant positive correlation with CI, and its standardized coefficient is 0.396 (t-value = 6.637***) When the SA is higher, its CI is also higher.

Table 7: Hypothesis Results of the Structural Equation Modeling

Hypothesis	(β)	t-Value	Result
H1: CON→PU	0.388	6.506***	Supported
H2: PU→CI	0.297	5.215***	Supported
H3: PU→SA	0.291	5.439***	Supported
H4: CON→SA	0.181	3.16**	Supported
H5: SYQ→SA	0.180	3.674***	Supported
H6: INQ→SA	0.280	5.61***	Supported
H7: SEQ→SA	0.185	3.655***	Supported
H8: SA→CI	0.396	6.637***	Supported

Note: *** p<0.001, ** p<0.01
Source: Created by the author

Based on the results in Table 7, **H1** contends that validation, with a standardized path coefficient value of 0.388 for this structural method, is a significant factor in determining perceived utility. Based on several prior academic studies, including confirmation as a crucial aspect determining users' perceived utility, the researchers established the association between confirmation and perceived usefulness. (Bhattacherjee, 2001).

With a standardized path coefficient value of 0.297, the analysis in **H2** demonstrates that perceived usefulness is one of the key components of continuance intention. Their judgments of an e-learning system's perceived value positively affected both their intention to use it going forward and how much they enjoyed it. (Tan & Kim, 2015).

The **H3** evidence supports the statistical hypothesis, which shows that perceived usefulness significantly affects satisfaction, with a standardized path coefficient value of 0.291. Their PU of it accurately predicts how contented students are with the e-learning program. (Cheng, 2014).

Additionally, **H4** demonstrates that confirmation and satisfaction have a significant positive association with a standardized path coefficient value of 0.181. The validation of expectations by the learners is a prerequisite for satisfaction with an e-learning system. (Cheng, 2019).

System quality strongly influences satisfaction in this survey, according to **H5,** and a standardized path coefficient value is 0.180. Customer satisfaction in using the system is based on how well users believe e-learning programs perform regarding knowledge delivery and retrieval. (Balog, 2011).

For **H6,** it has been found that information quality and satisfaction are significantly correlated, with a standardized path coefficient value of 0.280. According to various academics and industry professionals, information quality is crucial and a major aspect in determining the success and happiness of computer-based IS. (Panigyrakis & Chatzipanagiotou, 2006).

Service quality is found to significantly influence satisfaction for **H7,** with a standardized path coefficient value of 0.185. Service quality was determined by measuring user satisfaction with an e-learning program's assessment of information retrieval and delivery effectiveness. (Balog, 2011).

Finally, **H8** found a significant positive association between satisfaction and continuation intention, with a statistical score of 0.396 for a standardized path coefficient value. Satisfaction is a key sign of the desire to continue supporting e-Learning regarding school management systems. (Ismail et al., 2012).

5. Conclusion and Recommendation

5.1 Conclusion and Discussion

This study aims to investigate the factors impacting undergraduate students' satisfaction and continued intention with e-learning in Beijing, China. In order to demonstrate how perceived usefulness, confirmation, satisfaction, system quality, information quality, service quality, and continuation intention interact with one another, the conceptual framework presents seven hypotheses. In order to determine how these characteristics interacted, 479 undergraduate students who had previously taken online courses participated in the questionnaire responses. Confirmatory factor analysis (CFA) is used to determine whether data fit a particular measurement model that was theoretically derived. Using structural equation modeling (SEM), the relationship between latent and observable factors influencing satisfaction was also assessed, and hypotheses were tested. According to the results of this study, when the dependent variable is CI, SA plays a mediating role in the impact of CON, SYQ, INQ, and SEQ on CI; PU has a mediating role in the impact of CON on CI, SA, and PU There is a mediating role in the impact of CON on CI; when the dependent variable is SA, PU has a mediating role in the impact of CON on SA.

5.2 Recommendation

Following are some useful recommendations from the researchers for additional online education based on the findings of this quantitative survey. First, in this study, contentment is the construct that has the most bearing on students' intentions to continue their online education. Students choose to continue using the online education system due to their acceptance of it and other factors. Therefore, college teaching units should fully enhance how Internet education operates and allow students to continue using this instructional tool.

Second, even though the outcomes of my nation's online education study are still being revealed, significant advancements and development have been made. However, there is still a significant issue with inadequate localization research and innovation in daily life. As a result, researchers must question the established quo, approach their job imaginatively, examine the social climate of our nation, and produce findings that support the localization of online education research.

E-learning still has certain conceptual issues; some teachers have conformed to the outdated educational model. In order to modify their views on online learning and instructional reform, we must motivate instructors. Schools can provide advanced courses and participate in teaching seminars under "Teaching Online." Encourage the development of novel educational and pedagogical approaches and give instructors the support they need to alter roles and responsibilities quickly. Then, put together a knowledgeable research team for your online course. The team's capacity to successfully mentor instructors in e-learning and online teaching practices is essential to raise the caliber of online instruction at the school. Investigate the design of online learning to create a specialized e-learning strategy.

Finally, the development of online education is greatly aided by student flexibility. To the extent that students are satisfied with online education, service, information, and system quality are also of utmost importance. Teachers should motivate students to shift from being recipients of knowledge to being creators of knowledge.

5.3 Limitation and Further Study

The scope of the preliminary research is restricted to colleges and universities in the Beijing region of China according to the study's limits and research aims. Not mentioned are other colleges and universities. Only seven latent variables total are included in the conceptual framework. Consequently, the following two viewpoints are regarding the additional investigation: including other areas of China in the research's purview. To create a conceptual framework, it is also important to investigate various technology acceptance theories, such as the Theory of Rational Action (TRA) and the Theory of Planned Behavior (TPB).

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