pISSN: 1906 - 6406 The Scholar: Human Sciences
eISSN: 2586 - 9388 The Scholar: Human Sciences
http://www.assumptionjournal.au.edu/index.php/Scholar

Factors Influencing Undergraduate Students' Satisfaction Towards Online Learning in Chongqing, China

Yanli Chen*

Received: May 20, 2023. Revised: August 15, 2023. Accepted: August 21, 2023.

Abstract

Purpose: With the rapid development of information technology, online teaching has gradually become an essential national education, and online instruction in universities has also been raised to a strategic height. However, there are still many areas for improvement in the extensive application of online teaching in colleges and universities. This study aims to assess the factors influencing student satisfaction, including self-efficacy, perceived usefulness, ease of use, information quality, service quality, and system quality. **Research design, data, and methodology:** Quantitative research is conducted by distributing questionnaire to 500 undergraduate students from Southwest University of Chongqing, China, as a sample and discusses the above factors to verify the hypothesis. This paper uses a five-point Likert scale to measure items. The Item-Objective Congruence (IOC) and pilot test (n=50) of Cronbach's Alpha were validated before the data collection. Confirmatory factor analysis (CFA) and structural equation modeling (SEM) are the main statistical methods. **Results:** Self-Efficacy has a significant influence on perceived usefulness. Satisfaction is significantly influenced by perceived usefulness, perceived ease of use, information quality, service quality, and system quality. **Conclusions:** The results can provide help for the management of the online education system in schools to understand the student behavior and their satisfaction with online learning.

Keywords: Online Learning, Information Quality, Service Quality, System Quality, Satisfaction

JEL Classification Code: E44, F31, F37, G15

1. Introduction

This research focuses on online learning or e-learning, courses, and concepts that give corresponding concept definitions based on this research. At the same time, corresponding definitions and explanations are given for e-learning and open education resources, which are highly related to online learning courses.

Examining the advantages of online and offline education, many students have expressed their satisfaction with the hybrid instructional process rather than only traditional or online instruction (Popma et al., 2012). The teacher would

1*Yanli Chen, Chongqing Vocational College of Electronic Engineering. Email: 274246846@qq.com

cohabit with small classes and return to the community and home education, multimedia education, and online learning. They pay attention to cultivating the student's ability of temporary organization so that training can meander through new environments and make a significant judgment and new relationships that can be found in the change of the agile repeatedly. For a long time, people with general skills or natural environment (Toffler, 1970).

The selection of Chongqing, China as the study area holds strategic importance within the realm of educational research, specifically in the context of eLearning adoption among high school students. Chongqing, as one of China's major cities with a rapidly growing population and a dynamic educational landscape, provides an intriguing backdrop to investigate the factors influencing eLearning adoption.

In conclusion, the selection of Chongqing, China as the study area is grounded in its dynamic educational landscape, ongoing digital transformation, and the relevance of current research. Exploring eLearning adoption among high school students in Chongqing offers insights into the interplay of urban-rural dynamics, government initiatives, cultural influences, and educational disparities, contributing to the broader discourse on technology-enhanced education. Therefore, this study aims to assess the factors influencing student satisfaction, including self-efficacy, perceived usefulness, ease of use, information quality, service quality, and system quality.

2. Literature Review

2.1 Technology Acceptance Model (TAM)

The TAM matrix and advanced development version are defined as using a specific system's prediction factor (Sun & Zhang, 2006). According to the technology acceptance model, its advanced theoretical model combines with TAM2 to explain the acceptance of Information or specific systems in detail (Venkatesh & Davis, 2000). Davis (1989) demonstrated that TAM was initially used as a predictor for individuals to accept or use new I.T. at work because measuring the actual use of technology is a challenge.

Davis (1989) and some researchers proposed the Technology Acceptance Model (TAM) as a theory that predicts and explains the drivers of intention and behavior in specific contexts. Based on the rational behavior theory of Fishbein and Ajzen (1975), this theory has been improved in a new way. Good behavior theory is a mature and successful theoretical paradigm that can describe and predict the goals and behaviors of technology.

2.2 Information system success model (ISSM)

According to Petter et al. (2008), this model has been partially or entirely applied to some research. The study proved that there is a link between each structure. DeLone and McLean (2016) findings provided six variables for evaluating the success of is. The results show that system quality, information quality, use, user satisfaction, and personal and institutional impact. DeLone and McLean (2016) stressed that they are not independent of each other but have multiple dimensions of relevance. Rather than empirically testing the model, they seek more improvements and classification confirmation.

According to Nelson et al. (2005), data warehouse, user satisfaction, availability, ease of use, user use, etc., will be affected by the system's information quality and service quality. According to the survey results of the previous information impact model, it is mainly generated by the communication model (DeLone & McLean, 1992). The previous model used some or all of the six modules: Information and system quality, satisfaction, organization, and personal influence. The researcher said that the model realized the success of the information system. The main goal of its creation was achieved. Teo et al. (2003) found whether network users have a sense of pleasure and whether the community feels that the quality of Information and the system have a particular impact.

2.3 Social Cognitive Theory (SCT)

Bandura (1986) first used the social cognitive theory to illustrate social learning better. The report points out that the determinants of individual behavior and environment impact the acquisition and sustainability of individual behavior (Bandura, 2001). Users rarely use social cognitive theory, but some inconspicuous parts will be regarded as the core structure (Rana & Dwivedi, 2015). Establishments such as Se and Anxiety still maintain their original forms. This effect also comes from the attitude of TAM (Venkatesh et al., 2003). According to the literature review of social cognitive theory, there are three core dimensions of meta-structure and related variables, which can be used as the reference object of this study (Carillo, 2010).

Social cognitive theory is essential to psychology, pedagogy, and communication. He believes that how people acquire knowledge is closely related to social interaction, experience, and the role of external media. "Social learning" is an extension of Albert Bandura's sociological thought. This theory points out that when people see a particular behavior and result, they will remember the order of things and use it as a guide for the next step. Observation models can also stimulate the potential of observers in their research. People should not only learn new behavior concepts but also

learn how to do them. Observers can choose to imitate behaviors according to their behaviors and results. In many cases, the media is the model of many groups.

2.4 Self-Efficacy

Self-efficacy is students' confidence in completing work and obtaining results (Liaw, 2008). In addition, self-efficacy is a significant factor in college online learning (Aldholay et al., 2020). Lee (2006) said self-efficacy recognizes a user's ability to use a computer online. Self-efficacy is also thought to fulfill expectations of using information systems by using one's subjective perceptions and desires about the procedure. Self-efficacy is recognizing a user's ability to use a computer online. Self-efficacy is the expectation of implementing information systems using their subjective perception and desire for the design (Lee et al., 2015). In Venkatesh et al. (2003) 's study, self-efficacy indicates individual estimation of the capability to complete a special mission with technique. Self-efficacy is the capacity to be mutually engaged with technology (Liaw, 2008).

In the context of this study, the most significant diversity in the scale used to evaluate computer self-efficacy and the perception scale of Web-CT ease of use is the object of each scale. In this study, computer self-efficacy is mainly concentrated on computers; Perceived ease of use scale on Web-CT. This is one of many noticeable differences because trust and ease of use may differ. Unlike the previous simple definition, self-efficacy is based on past successful experiences to evaluate the individual's response to external stimuli. In this case, network self-efficacy pays particular attention to the self-confidence of individuals when facing significant challenges and tasks, such as word processing, e-mail, chat rooms, course content, and the Internet.

On the contrary, the sense of ease of use can measure confidence, but it is unnecessary to increase previous experience. You will find that a system with a background is based on the initial impression. This paper takes computer self-efficacy as an example and uses the skills of web-based learning systems in web-based reinforcement teaching to show its self-efficacy. Therefore, a hypothesis is proposed:
H1: Self-efficacy has a significant influence on perceived usefulness.

2.5 Perceived Ease of Use

Shih (2004), based on many references from previous studies, concluded that Perceived ease of use is related to the correctness, reliability, practicality, responsiveness, efficiency, and flexibility of information system functions associated with the quality of information system functions. Students showed that the operation of the hybrid learning system is simple and effective and can improve their academic performance (Rui-Hsin & Lin, 2018). It can be an indicator instructing learning and navigating the system used between users. The view on the ease of use of technology represented the internal motivation of an individual's behavior or performance to some extent (Altin et al., 2008). Likewise, perceived ease of use can be identified as the extent to which the technology quickly understands (Nagy, 2018).

Learners believed operating in a specially set system would be more manageable over time. In other words, users believe that the content operating system will be easy to use in actual operation (Masrek & Gaskin, 2016). The willingness to use and reuse will also be affected by perceived ease of use. Salisbury et al. (2001) mentioned that perceived ease of use might be the driving factor of behavioral intention. In short, use intends to determine the practical usefulness or service, while reuse considers it easy to use. This tended to be easy to use or apply when they thought using the service did not require effort (Kahar et al., 2018). Cheng (2014) pointed out that if learners save time and energy using the online learning system, they can complete learning tasks systematically and efficiently. Then, learners are more likely to integrate the learning system, increase their enjoyment and confidence in it, and believe that ease of use will significantly impact learners' tendency to use the system in the future. (Lee et al., 2007) It is reported that those who think they can easily use technology to complete their work are usually encouraged by positive attitudes. Hence, the researcher put forward a hypothesis:
H2: Perceived ease of use has a significant influence on satisfaction.

2.6 Perceived Usefulness

According to Mouakket and Bettayeb (2015), Perceived usefulness is the feeling that people use information technology to improve work performance. This kind of cognition has intense subjectivity and predictability and is affected by the perceiver's cognitive level and subjective feelings. According to Sharma et al. (2005), perceived usefulness is perceived to improve academic or professional performance using a system. Many surveys show users' acceptance of distributed accounting systems depends mainly on perceived effectiveness (Thong et al., 2002). López-Nicolás et al. (2008) also said that perceived usefulness means that users use the power of technology to enhance their self-confidence, make them work faster, easier, and more efficiently, and achieve satisfactory results. Perceived usefulness demonstrates that people convince that using decentralized learning can improve their academic achievements (Davis, 1989). Based on previous studies, a hypothesis is indicated:

H3: Perceived usefulness has a significant influence on satisfaction.

2.7 Information Quality

Srinivasan (1985) suggested that information quality takes "content and format of the report" as an indicator to measure the effectiveness of the user perception system. The main content includes the report's correctness, relevance, and adequacy, while the format consists of the report's format, timeliness, statement, and news order. Information quality is the degree to which target users showed that Information is relevant, timely, accurate, and complete (Lee et al., 2007). Information quality refers to the ability of the system to convey information intention (Wang & Lin, 2012). Information quality is people's understanding of information quality in recent years (Mckinney et al., 2002). Information quality is the user's measurement of data. Here, the term "information" also refers to the content of the network application displayed by the user. In addition, the quality of data impacts satisfaction and users' willingness to visit again (Ranganathan & Ganapathy, 2002).

Eom (2012) said that the effectiveness, correctness, and integrity of information transmission and the quality of information content are related to context. In other words, information quality is evaluated by the effectiveness, relevance, comprehensibility, relevance, and completeness of the Information provided by the platform. Many criteria can be used to assess the quality of Information (Saleh, 2001). There are two criteria to measure the quality of Information (Cronin & Taylor, 2005). Some studies consider information quality and regard information quality as the basis of user satisfaction or user information satisfaction (Bailey & Pearson, 1983). High-quality Information can improve learning satisfaction and encourage online learning users to continue using online learning systems, thus improving the practical value of online systems (Chang, 2013). According to Cao et al. (2005), various earlier researchers had acknowledged the significance of performance measurement to the efficiency and success of computer technology. Thus, this study hypothesizes that:

H4: Information quality has a significant influence on satisfaction.

2.8 System Quality

Aldholay et al. (2018) said that system quality refers to the excellent learning experience of system users when using the system, including ease of understanding, learning, and use, as well as the fun and convenience of linking. The improvement of the understanding and operation ability of the system is a meaningful sign to evaluate its quality. In different application environments, system quality is the critical factor affecting user satisfaction (Chang, 2013; Lwoga, 2013; Masrek et al., 2010; Raeth et al., 2009; Urbach & Müller, 2012; Wu & Wang, 2006). Seddon and Kiew (1996) pointed out, "The quality of the system is related to the defects of the system, the consistency of the user interface, ease of use, the quality of documents and other factors, as well as the quality and maintainability of the code." System quality is an investigation collection of strategic information systems and other attributes (Gorla et al., 2010). Such as perceived ease of use, functionality, reliability, data quality, flexibility, and integration (DeLone & McLean, 2003).

According to Lederer et al. (2000) 's research, system quality was a robust forecasted factor of perceived usefulness. The study by Lee et al. (2015) considered system quality to be the factor that affects users' trust, which is essential in the technology adoption environment. DeLone and McLean (1992) showed that system quality greatly concerns the technological standard of the system. Previous studies have realized the significance of system quality, especially in a virtual community and electronic business (Ahn et al., 2007; Teo et al., 2003). System quality affects the user's concept of system usefulness (DeLone & McLean, 2003). The system's quality is related to the user's perception of the digital library's performance in retrieving and transmitting Information (Balog, 2011). Accordingly, a hypothesis is developed:

H5: System quality has a significant influence on satisfaction.

2.9 Service Quality

Service quality refers to the level of service or convenience users obtain when using computer systems to receive and transmit Information. (Masrek & Gaskin, 2016). Some scholars believe service providers provide quality and consistency (DeLone & McLean, 2003). Service quality has the attributes of reliability, acceptability, empathy, tangibility, assurance, interactivity, and usefulness in providing services to users (Aldholay et al., 2018).

Ahn et al. (2007) showed that service quality positively influenced perceived usefulness. According to Kettinger and Lee (1994), service quality has gradually become one of the functions to measure the adoption and acceptance of information systems. From literature analysis, researchers found that they exchanged two terms: Web service quality and network service quality (Zeithaml et al., 2002). Some researchers showed that the service quality of e-learning could be regarded as the help provided by teachers and technical maintenance personnel (Ozkan & Koseler, 2009). They are a pioneer in introducing the concept of electronic service quality into the research of website service quality. From the definition of this survey, we can see that the quality

of this website is unmistakable.

We look forward to customers' comfort, confidence, fast delivery, and reliable service. He also believes that the availability of technology "shows that its performance will be improved through a special system." He thinks the convenient use of a unique system will impact users' applications (Davis, 1989). Subsequently, a hypothesis is suggested:

H6: Service quality has a significant influence on satisfaction.

2.10 Satisfaction

According to Islam et al. (2018), satisfaction refers to the consistency of students in using technology, their expectations of needs, and their use based on existing values. In other words, satisfaction refers to how students use the learning system and their cognitive expectations of themselves. Spreng and Chiou (2002) defined satisfaction as an affective state that is the emotional reaction to a product or a service experience. User satisfaction is a fundamental determinant of the new system's success (Aldholay et al., 2018). When conducting technology usage research, user satisfaction is one of the essential variables.

Additionally, one of the most important things researchers must consider when investigating technology usage is satisfaction with the technology (DeLone & McLean, 2003). Satisfaction is an important criterion to measure the success of an information system. In technology application research, user satisfaction is essential (Aldholay et al., 2018).

The interaction between teachers and teachers dramatically impacts students' satisfaction. In different experimental studies, the quality and popularity of teacher-student communication are also the main factors affecting students' satisfaction. (Croxton, 2014). These researchers pointed out that the latest teacher feedback will affect college students' and graduates' overall study satisfaction (Walker & Kelly, 2007). Other researchers have found similar findings (Einarson & Matier, 2005). In addition, from multiple perspectives, online self-efficacy is a sub-dimension of online learning preparation, which has nothing to do with students' Satisfaction (Kuo et al., 2014). The higher the value of homework, the higher the learning self-efficacy and the more interest in online courses.

3. Research Methods and Materials

3.1 Research Framework

To construct the conceptual framework, existing scientific research approaches were examined. Additionally, it was based on the TAM and ISSM SCT from theoretical frameworks. Chang (2013) identified a correlation between system quality, service quality, information quality, and satisfaction. Besides, Masrek and Gaskin (2016) demonstrated how interconnected perceived usefulness, ease of use, and happiness are. In addition, Qin et al. (2019) also established that self-efficacy and perceived usefulness are associated. The conceptual framework was constructed based on these constructs, as shown in Figure 1.

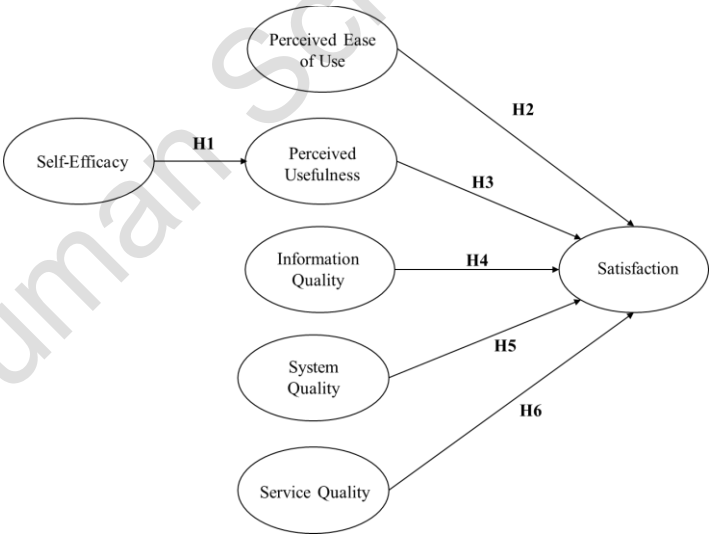

Figure 1: Conceptual Framework

H1: Self-efficacy has a significant influence on perceived usefulness.

H2: Perceived ease of use has a significant influence on satisfaction.

H3: Perceived usefulness has a significant influence on satisfaction.

H4: Information quality has a significant influence on satisfaction.

H5: System quality has a significant influence on satisfaction.

H6: Service quality has a significant influence on satisfaction.

3.2 Research Methodology

In this step, 1,040 questionnaires will be distributed to the four secondary colleges of Southwest University, 40 of which are for insurance purposes, according to the predicted sample size of the previous multistage sampling. The staff will organize an appropriate number of students each academic year and conduct attitude assessments within the period specified in the student curriculum plan. After obtaining all

valid questionnaires, the researchers sorted out and coded the data and deleted any inaccurate data that may exist. For the first data collection stage, if the percentage of effective questionnaires is insufficient, the researchers will conduct a follow-up survey next week to ensure that each component of the target specialty has generated enough correct data to meet the standards of this article.

Before the data collection process, The Item-Objective Congruence (IOC) and pilot test of Cronbach's Alpha were applied to validate the validity and reliability of all scale items of variables. As a result, all scale items approved by three experts at a score equal to or above 0.6. Cronbach's alpha coefficient reliability test was used to examine a pilot test (n=40). Consequently, all constructs show internal consistency with above 0.7 (George & Mallery, 2003). Confirmatory factor analysis (CFA) and structural equation modeling (SEM) are the main statistical methods.

3.3 Population and Sample Size

The researcher specified the target population as a group of people and focused primarily on them in the study (Malhotra et al., 2017). According to Hair et al. (2007), the target population is a comprehensive collection of characteristics important to the research. The target population of this empirical study is all undergraduates and majoring in art design, physical, historical culture, and English at Southwest University, China. In addition, to determine the appropriate sample size, sampling techniques will be used as the sampling process, including judgmental, quota and convenience.

3.4 Sampling Technique

In addition, to determine the appropriate sample size, sampling techniques will be used as the sampling process, including judgmental, quota and convenience. Judgmental sampling is to select the specific group of undergraduate students, majoring in art design, physical, historical culture, and English at Southwest University of Chongqing, China. For quota sampling, the researcher divided number of students according to their essential characteristics and education level. With the help of the staff of the secondary colleges, the researcher will arrange an appropriate number of undergraduates according to the proportion of the quota sampling scheme. Finally, 500 undergraduates would have been selected as the final stage samples.

Table 1: Sample Units and Sample Size

Educational Background	Majors	Population	Proportional Sample Size
Undergraduate	History and Culture	937	94
	English	1903	191
	Physical	1113	112
	Art Design	1025	103
Total		**4978**	**500**

Source: Constructed by author

4. Results and Discussion

4.1 Demographic Information

Table 2 summarizes the comprehensive demographic characteristics of 500 respondents. Male students accounted for 38% of all participants, while female students accounted for 62%. 18.8% of students majored in history and culture, 22.4% majored in physical, 20.6% majored in art design, and 38.2% majored in English. According to the academic year of the participants, 30% are first-year students, 24 % are sophomores, 23.4% are juniors, and 22.6% are seniors.

Table 2: Demographic Profile

Demographic and General Data (N=500)		Frequency	Percentage
Gender	Male	190	38%
	Female	310	62%
Major Belong	History and Culture	94	18.8%
	English	191	38.2%
	Physical	112	22.4%
	Art Design	103	20.6%
Academic Year	Freshman	150	30%
	Sophomore	120	24%
	Junior	117	23.4%
	Senior	113	22.6%

Source: Constructed by author

4.2 Confirmatory Factor Analysis (CFA)

Masrek and Gaskin (2016) emphasized that confirmatory factor analysis (CFA) can be used to evaluate structural equation models and the degree of convergence and differentiation. Table 3 demonstrates that all constructs show internal consistency with above 0.7 (George & Mallery, 2003), the absolute values of the average extracted variance (AVE) were more significant than 0.50, the composite reliability (CR) was beyond 0.70, and the factor loading values were all over 0.50 (Bagozzi & Yi, 1988; Hair et al., 2014).

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 Ease of Use (PEOU)	Davis (1989)	4	0.915	0.741-0.849	0.857	0.601
Perceived Usefulness (PU)	Davis (1989)	5	0.884	0.569-0.867	0.837	0.514
Self – Efficacy (SE)	Bandura (1986)	3	0.831	0.733-0.933	0.898	0.746
Information Quality (IQ)	Aldholay et al. (2020)	4	0.886	0.733-0.915	0.900	0.695
System Quality (SYQ)	DeLone and McLean (2003)	4	0.848	0.560-0.893	0.842	0.526
Service Quality (SQ)	Yuce et al. (2019)	5	0.735	0.750-0.822	0.837	0.632
Satisfaction (SAT)	Aldholay et al. (2018)	5	0.920	0.724-0.806	0.877	0.767

Table 4 presents all applicable thresholds for the absolute fit indicators, such as CMIN/DF, GFI, AGFI, and RMSEA, and the incremental fit measurements, such as CFI, NFI, and TLI, match the requirements. Consequently, all these measurements for the goodness of fits employed in the CFA examination were acceptable.

Table 4: Goodness of Fit for Measurement Model

Fit Index	Acceptable Criteria	Statistical Values Before Adjustment	Statistical Values After Adjustment
CMIN /DF	<3.00 (Hair et al., 2010)	2.586	2.043
GFI	> 0.90 (Bagozzi & Yi, 1988)	0.880	0.906
AGFI	> 0.80 (Filippini et al., 1998)	0.853	0.884
RMSEA	< 0.05 (Browne & Cudeck, 1993)	0.890	0.914
CFI	> 0.90 (Hair et al., 2006)	0.929	0.954
NFI	> 0.90 (Hair et al., 2006)	0.919	0.947
TLI	> 0.90 (Hair et al., 2006)	2.586	2.043
Model Summary		**Not in harmony with empirical data**	**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.

The consequences of the investigation into and presentation of the discriminant validity are demonstrated in Table 5. The diagonally designated quantity is the AVE square root of the AVE, and neither of the correlations crossing any two latent variables was more considerable than 0.80 (Liu et al., 2020; Schmitt & Stults, 1986). Therefore, employing these quantitative measurements, discriminant validity was established.

Table 5: Discriminant Validity

	PEOU	PU	SE	IQ	SYQ	SEQ	SAT
PEOU	**0.775**						
PU	0.165	**0.717**					
SE	0.100	0.198	**0.864**				
IQ	0.214	0.176	0.059	**0.834**			
SYQ	0.310	0.152	0.218	0.139	**0.795**		
SEQ	0.265	0.208	0.029	0.243	0.144	**0.725**	
SAT	0.455	0.241	0.063	0.433	0.384	0.307	**0.876**

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

4.3 Structural Equation Model (SEM)

According to data from various publications, the structural equation model consists of two parts (Byrne, 2016). In Sewall Wright's research, we first proposed a structural equation model (SEM) and pointed out that Ossia had accurately explained or reconstructed the regression equations of observed variables in some research fields with direct and indirect effects (Wright, 1920, 1921). Table 6 demonstrates that when adjusted by AMOS version 24, the combined values of CMIN/DF, GFI, AGFI, CFI, NFI, TLI, and RMSEA were all above acceptable limitations. As the outcome reveals, the goodness of fit of the SEM was established.

Table 6: Goodness of Fit for Structural Model

Fit Index	Acceptable Criteria	Statistical Values Before Adjustment	Statistical Values after Adjustment
CMIN /DF	<3.00 (Hair et al., 2010)	1014.607/371 or 2.735	701.026/367 or 1.910
GFI	> 0.90 (Bagozzi & Yi, 1988)	0.866	0.908
AGFI	> 0.80 (Filippini et al., 1998)	0.843	0.908
RMSEA	< 0.05 (Browne & Cudeck, 1993)	0.059	0.043
CFI	> 0.90 (Hair et al., 2006)	0.919	0.958
NFI	> 0.90 (Hair et al., 2006)	0.879	0.916
TLI	> 0.90 (Hair et al., 2006)	0.911	0.954
Model Summary		**Not in harmony with empirical data**	**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 outcomes shown in Table 7, information quality exhibited a direct, significant effect on satisfaction, resulting in the most substantial impact in this quantitative approach, a standardized path coefficient (β) of 0.383 (t-value =7.626***). Perceived ease of use provides the second-powerful interaction effect on satisfaction with β at 0.368 (t-value of 7.234***).

Additionally, system quality significantly influenced satisfaction with the β at 0.309 (t-value at 6.231***), while service quality markedly impacted satisfaction with the β at 0.122 (t-value at 2.649**). Moreover, self-efficiency was also examined and determined to substantially move perceived usefulness with the β of 0.223 (t-value of 4.180***). Consequently, perceived usefulness exhibited the least significant influence on satisfaction in this quantifiable investigation, with 0.095 (t-value at 2.003*).

Table 7: Hypothesis Results of the Structural Equation Modeling

Hypothesis	(β)	t-Value	Result
H1: SE→PU	0.223	4.180***	Supported
H2: PEOU→SAT	0.368	7.234***	Supported
H3: PU→SAT	0.095	2.003*	Supported
H4: IQ→SAT	0.383	7.626***	Supported
H5: SYQ→SAT	0.309	6.231***	Supported
H6: SEQ→SAT	0.122	2.649**	Supported

Note: *** p<0.001, ** p<0.01, * p<0.05
Source: Created by the author

According to the findings in Table 7, this structural method's standardized path parameter threshold is 0.223, and **H1** indicates that perceived usefulness is an essential determinant of self-efficacy. Some researchers believe that in the process of online learning, self-efficacy could significantly predict the performance of online learning, and each subject has a high degree of confidence in online learning. (Hamden et al., 2021; Joo et al., 2000; Marakas et al., 1998)

In **H2,** the analysis demonstrated that one of the primary characteristics of satisfaction is perceived ease of use, with a standardized path coefficient of 0.368. Masrek and Gaskin (2016) and Cheng (2020) also suggested that there are subjective cognitive differences in information systems, and perceived ease of use is an essential factor determining whether users adopt information systems and affect satisfaction.

The observable statistic findings for **H3** confirmed the hypothesis that perceived usefulness had a significant consequence on satisfaction, with the common coefficient value of 0.095 indicating the most significant necessary development in this quantification investigation. To satisfy users, they must first recognize the role of perceived Usefulness (Mouakket & Bettayeb, 2015). Perceived usefulness is the main reason affecting secondary students' satisfaction with online MBA programs (Arbaugh, 2005).

Additionally, **H4** demonstrated that information quality significantly impacted satisfaction, with a common coefficient value of 0.383. The information system is an essential subject in the management information system field. Some researchers took the performance method of information systems as a critical dependency factor in evaluating the institute's information system (DeLone & McLean, 1992). Information quality is a significant factor in satisfaction and significantly impacts satisfaction (Ainur et al., 2017).

Moreover, **H5** confirmed that system quality significantly impacted satisfaction in this investigation, with a common coefficient value of 0.309. At the same time, it also showed that the quality of online education has a significant impact on the final impression of users and evaluators, which is that the quality of online education can better adapt to the needs of learners, better complete teaching tasks, and improve the learning satisfaction of users (Yuce et al., 2019).

Regarding **H6,** it was observed that service quality had a significant relationship with satisfaction, resulting in an expected coefficient value of 0.122, which was the weakest effect point in this academic research. The results showed that online teaching could better meet the needs of learners, better complete teaching tasks, and improve the learning satisfaction of users. (Bailey & Pearson, 1983). The study found that service quality dramatically impacts the final fulfillment of users and evaluators. (Yuce et al., 2019)

5. Conclusion and Recommendation

5.1 Conclusion and Discussion

This study aims to determine which factors significantly impact undergraduate students' satisfaction in four different majors of Chongqing Southwest University in China with online education. The conceptual framework shows six assumptions to verify the interaction between perceived ease of use, usefulness, service quality, system quality, information quality, self-efficacy, and satisfaction. Five hundred undergraduates with online education experience participated in the questionnaire survey to determine the interaction between these variables. The confirmatory factor analysis (CFA) determines whether the data conforms to the measurement model derived from a specific theory. Similarly, the structural equation model (SEM) evaluates the relationship between observed and potential variables that affect satisfaction and tests hypotheses.

According to the results of this study, perceived ease of use, system quality, and information quality have the most

significant impact on satisfaction. Self-efficacy has the greatest direct impact on perceived usefulness. Service quality has a significant effect on happiness. In addition, perceived usefulness has a low impact on satisfaction.

5.2 Recommendation

This study identifies the factors influencing online learning satisfaction among college students in Chongqing, China. Therefore, Southwest University in Chongqing's follow-up convenient online learning course reform should fully consider the factors studied in this paper to obtain more effective teaching effects. Formulating professional teaching syllabus in colleges and universities should pay attention to student satisfaction and practical teaching connotation.

In this study, based on Hypothesis 1, Hypothesis 2, Hypothesis 3, Hypothesis 4, and Hypothesis 4, the researchers determined the relationship between information quality, system quality, service quality, perceived usefulness, perceived ease of use, and satisfaction relative linkage mechanism—assumption 5. Therefore, when designing online learning courses for all majors, teachers should carefully consider the effective combination of students' professional characteristics and technical aspects of online learning platforms to produce more effective teaching and learning quality. The findings of this study are consistent with Adegun and AKomolafe (2013) that the availability of devices such as laptops, mobile phones, tablets, portable digital assistants (PDAs), notebooks, and pads allows easy access to electronic resources anytime, anywhere, and the Information you need to teach, learn and research in seconds. Information quality and system quality determine student satisfaction with online learning, which will encourage the creation of high-quality infrastructure to expand the efficiency of online learning Universities improve the quality of education and motivate students to use new learning technologies.

5.3 Limitation and Further Study

For the actual situation of this survey, the limitation includes time: the duration of quantitative research is about one year. In addition, the population and sample are limited to four different majors of Southwest University of Chongqing, China, and the conceptual framework contains only six potential variables. Therefore, the following two

The view is about further exploration: expand the scope of research to other regions of China or Asian countries. In addition, other technology acceptance theories, such as the theory of reasonable action (TRA), the theory of planned behavior (TPB), and the information system success model (ISSM), should be explored to develop the conceptual framework.

References

Adegun, O. A., & AKomolafe, C. O. (2013). Entrepreneurship education and youth empowerment in contemporary Nigeria. *Scholarly Journal of Education, 2*(5), 52-57.

Ahn, T., Ryu, S., & Han, I. (2007). The Impact of Web Quality and Playfulness on user acceptance of online retailing. *Information Management, 44*(3), 263-275. https://doi.org/10.1016/j.im.2006.12.008

Ainur, A. K., Deni, S. M., Jannoo, Z., & Yap, B. W. (2017). Sample Size and Non-Normality Effects on Goodness of Fit Measures in Structural Equation Models. *Pertanika Journal of Science and Technology*, *25*(2), 575-586.

Aldholay, A., Abdullah, Z., Isaac, O., & Mutahar, A. M. (2020). The Perspective of Yemeni Students on the Use of Online Learning Extending the Information Systems Success Model with Transformational Leadership and Compatibility. *Information Technology & People*, *33*(1), 106-128.

Aldholay, A., Isaac, O., & Abdullah, Z. (2018). An extension of DeLone and McLean IS success model with self-efficacy Online learning usage in Yemen. *The International Journal of Information and Learning Technology*, *35*(4), 285-304. https://doi.org/10.1108/ijilt-11-2017-0116

Altin, C., Calisir, F., & Bayram, A. (2008). Understanding the behavioral intention to use ERP systems: An extended technology acceptance model. *In International Conference on Industrial Engineering and Engineering Management*, 2024-2028.

Arbaugh, J. B. (2005). Is There an Optimal Design for Online MBA Courses? *Academy of Management Learning and Education, 4*(2), 135-149. https://doi.org/10.5465/amle.2005.17268561

Bagozzi, R., & Yi, Y. (1988). On The Evaluation of Structural Equation Models. *Journal of the Academy of Marketing Science, 16*(1), 74-94. https://doi.org/10.1007/BF02723327.

Bailey, J. E., & Pearson, S. W. (1983). Development of a Tool for Measuring and Analyzing Computer User Satisfaction, *Management Science, 29*(5), 530-545. https://doi.org/10.1287/mnsc.29.5.530

Balog, A. (2011). Testing a multidimensional and hierarchical quality assessment model for digital libraries. *Studies in Informatics and Control*, *20*(3), 233-246. https://doi.org/10.24846/v20i3y201104

Bandura, A. (1986). Social foundations of thought and action: a social cognitive theory. *Journal of Applied Psychology*, *12*(1), 169. https://doi.org/10.4135/9781446221129.n6

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52,* 1-26. https://doi.org/10.1146/annurev.psych.52.1.1

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen and J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). Sage.

Byrne, B. M. (2016). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (3rd ed.). Routledge. https://doi.org/10.4324/9781410600219

Cao, M., Zhang, Q., & Seydel, J. (2005). B2C e-commerce website quality: an empirical examination. *Industrial Management & Data Systems, 105*(5), 645-661. https://doi.org/10.1108/02635570510600000

Carillo, K. D. (2010). "Social cognitive theory in I.S. research – literature review, criticism, and research Agenda," Communications in Computer and Information Science, *54*, 20-31.

Chang, C. C. (2013). Exploring the determinants of e-learning systems continuance intention in academic libraries, *Library Management*, *34*(1/2), 40-55. https://doi.org/10.1108/01435121311298261

Cheng, Y.-M. (2014). Extending the expectation-confirmation model with quality and flow to explore nurses continued blended e-learning intention. *Information Technology & People, 27*(3), 230-258. https://doi.org/10.1108/itp-01-2013-0024

Cheng, Y.-M. (2020). Understanding cloud ERP continuance intention and individual performance: a TTF-driven perspective. *Benchmarking: An International Journal, 27*(4), 1591-1614. https://doi.org/10.1108/bij-05-2019-0208

Cronin, J. J., & Taylor, S. A. (2005). User Capabilities in an Adaptive World. *Proceedings of the ACM Workshop on Media Studies and Implementations to Improve Access to Disabled Users, 56*(3), 1-10. https://doi.org/10.1177/0022242992056003

Croxton, R. A. (2014). The role of interactivity in student satisfaction and persistence in online learning. MERLOT Journal of Online Learning and Teaching, *10*(2), 314-325.

Davis, D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly, 13*(3), 319-339. https://doi.org/10.2307/249008

DeLone, W. H., & McLean, E. R. (1992). Information systems success: the quest for the dependent variable, *Information Systems Research, 3*(1), 60-95. https://doi.org/10.1287/isre.3.1.60

DeLone, W. H., & McLean, E. R. (2003). The Delone and Mclean model of information systems success: a ten-year update. *Journal of Management Information Systems/Spring, 19*(4), 9-30. https://doi.org/10.1073/pnas.0914199107

DeLone, W. H., & McLean, E. R. (2016). Information systems success measurement. *Foundations and Trends® in Information Systems, 2*(1), 1-116. https://doi.org/10.1561/ 2900000005

Einarson, M. K., & Matier, M. W. (2005). Exploring race differences in correlates of seniors' satisfaction with undergraduate education. Research in Higher Education, *46*(6), 641-676. https://doi.org/10.1007/s11162-004-4138-0.

Eom, S. B. (2012). Effects of LMS, self-efficacy, and self-regulated learning on LMS effectiveness in business education. *Journal of International Education in Business, 5*(2), 129-144. https://doi.org/10.1108/18363261211281744

Filippini, R., Forza, C., & Vinelli, A. (1998). Trade-off and Compatibility Between Performance: Definitions and Empirical Evidence. *International Journal of Production Research, 36*(12), 3379-3406. https://doi.org/10.1080/002075498192111

Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research* (1st ed.). Addison-Wesley.

George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference 11.0 update* (4th ed.). Allyn & Bacon.

Gorla, N., Somers, R. M., & Wong, R. (2010). Organizational impact of system quality, information quality, and service quality. *The Journal of Strategic Information Systems*, *19*(3), 207-228. https://doi.org/10.1016/j.jsis.2010.05.001

Hair, F., Money, H., Page, M., & Samouel, P. (2007). Research Methods for Business, *Education + Training, 49*(4), 336-337. https://doi.org/10.1108/et.2007.49.4.336.2

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Prentice-Hall.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariant data analysis* (6th ed.). Pearson.

Hair, J. F., Hult, G. T. M., & Ringle, C., & Sarstedt, M. (2014). *A primer on partial least squares structural equation modeling.* SAGE Publishing.

Hamden, K., Al-Bashaireh, A. M., Zahran, Z., & Al-Daghestani, A. (2021). University students' interaction, Internet self-efficacy, self-regulation, and satisfaction with online education during pandemic crises of COVID-19 (SARS-CoV-2). *International Journal of Educational Management, 35*(3), 713-725. https://doi.org/10.1108/IJEM-11-2020-0513

Islam, A. Y. M., Mok, M. M. C., Qian, X., & Leng, C. H. (2018). Factors influencing students' satisfaction in using wireless Internet in higher education cross-validation of TSM. *The Electronic Library, 36*(1), 2-20.

Joo, Y. J., Bong, M., & Choi, H. J. (2000). Self-efficacy for self-regulated learning, academic self-efficacy, and Internet self-efficacy in web-based instruction. *Educational Technology Research and Development, 48*(2), 5-17.

Kahar, A., Wardi, Y., & Patrisia, D. (2018). *The Influence of Perceived Usefulness, Perceived Ease of Use, and Perceived Security on Repurchase Intention at Tokopedia.com* [Paper presentation]. 2nd Padang International Conference on Education, Economics, Business, and Accounting (PICEEBA-2 2018). Indonesia. https://doi.org/10.2991/piceeba2-18.2019.20

Kettinger, W. J., & Lee, C. C. (1994). Perceived service quality and user satisfaction with the information services function. *Decision Science, 25*(5), 737-766. https://doi.org/10.1111/j.1540-5915.1994.tb01868.x

Kuo, Y. C., Walker, A. E., Schroder, K. E. E., & Belland, B. R. (2014). Interaction, internet self-efficacy, and self-regulated learning as predictors of student satisfaction in online education courses. The Internet and Higher Education, *20*, 35-50. https://doi.org/10.1016/j.iheduc.2013.10.001.

Lederer, A. L., Maupin, D. J., Sena, M. P., & Zhuang, Y. (2000). Technology acceptance model and the world wide web. *Decision Support Systems, 29*(3), 269-282. https://doi.org/10.1016/S0167-9236(00)00076-2

Lee, H., Chung, N., & Koo, C. (2015). Moderating effects of distrust and social influence on aesthetic experience of augmented reality: Motivation-opportunity-ability model perspective. *Proceedings of the 17th International Conference on Electronic Commerce*, 1-8.

Lee, H., Kim, J., & Kim, J. (2007). Determinants of success for the application service provider: an empirical test in small businesses. *International Journal of Human-Computer Studies, 65*(9), 796-815. https://doi.org/10.1016/j.ijhcs.2007.04.004

Lee, Y.-C. (2006). An Empirical Investigation into Factors Influencing the Adoption of an e-Learning System. *Online Information Review, 30,* 517-541. https://doi.org/10.1108/14684520610706406

Liaw, S. S. (2008). Investigating students' perceived satisfaction, behavioral intention, and effectiveness of e-learning: A case study of the blackboard system. *Computers & Education, 51*(2), 864-873. https://doi. org/10.1016/j.compedu.2007.09.005.

Liu, J., Li, Q., & Wang, J. (2020). Influencing Factors of Online Office APP Users' Intention Based on UTAUT. *Information Science*, *38*(9), 49-68.

López-Nicolás, C., Molina-Castillo, F. J., & Bouwman, H. (2008). An assessment of advanced mobile services acceptance: Contributions from TAM and diffusion theory models. *Information & Management, 45*(6), 359-364.

Lwoga, E. T. (2013). Measuring the success of library 2.0 technologies in the African context: The suitability of the DeLone and Mclean's model. *Campus-Wide Information Systems, 30*(4), 288-307.

Malhotra, N. K., Nunan, D., & Birks, D. F. (2017). *Marketing research: An applied approach* (5th ed.). Pearson Education.

Marakas, G. M., Yi, M. Y., & Johnson, R. D. (1998). The multilevel and multifaceted character of computer self-efficacy: Toward clarification of the construct and an integrative framework for research. *Information System Research, 9*(2), 126-163.

Masrek, M. N., & Gaskin, J. E. (2016). Assessing User's Satisfaction with Web Digital Library: The Case of Universiti Teknologi MARA. *The International Journal of Information and Learning Technology, 33*(1), 36-56. https://doi.org/10.1108/ijilt-06-2015-0019

Masrek, M. N., Jamaludin, A., & Mukhtar, S. A. (2010). Evaluating academic library portal effectiveness: A Malaysian case, *Journal of Library Review, 59*(3), 198-212.

Mckinney, V., Yoon, K., & Zahedi, F. M. (2002). The measurement of web-customer satisfaction. *Information Systems Research. 13*(3), 296-315. http://dx.doi.org/10.1287/isre.13.3.296.76

Mouakket, S., & Bettayeb, A. M. (2015). Investigating the Factors Influencing Continuance Usage Intention of Learning Management Systems by University Instructors the Blackboard System Case. *International Journal of Web Information Systems, 11*(4), 491-509. https://doi.org/10.1108/ijwis-03-2015-0008

Nagy, J. (2018). Evaluation of Online Video Usage and Learning Satisfaction: An Extension of the Technology Acceptance Mode. *International Review of Research in Open and Distributed Learning, 19*(1), 160-185. https://doi.org/10.19173/irrodl.v19i1.2886

Nelson, R. R., Todd, P. A., & Wixom, B. H. (2005). Antecedents of information and system quality: An empirical examination within the context of data warehousing. *Journal of Management Information Systems, 21*(4), 199-235. https://doi.org/10.1080/ 07421222. 2005.11045823

Ozkan, S., & Koseler, R. (2009). Multidimensional students' evaluation of e-learning systems in the higher education context: An empirical investigation. *Computers & Education, 53*(4), 1285-1296. https://doi.org/10.1016/j.compedu.2009.06.011

Petter, S., DeLone, W., & McLean, E. (2008). Measuring information systems success: Models, dimensions, measures, and interrelationships. *European Journal of Information Systems, 17*(3), 236-263.

Popma, A., Vries-Bouw, M., Jansen, L., Vermeiren, R., Doreleijers, T., & Ven, P. (2012). Concurrent attenuated reactivity of alpha-amylase and cortisol is related to disruptive behavior in male adolescents. *Hormones and Behavior, 62*(1), 77-85. https://doi.org/10.1016/j.yhbeh.2012.05.002

Qin, C., Liu, Y., Mou, J., & Chen, J. (2019). User Adoption of a Hybrid Social Tagging Approach in an Online Knowledge Community. Aslib Journal of Information Management, *71*(2), 155-175. https://doi.org/10.1108/AJIM-09-2018-0212

Raeth, P., Smolnik, S., Urbach, N., & Zimmer, C. (2009). Towards Assessing the Success of Social Software in Corporate Environments. *AMCIS 2009 Proceedings. 662,* 1-10.

Rana, N., & Dwivedi, Y. K. (2015). The unified theory of acceptance and use of technology (UTAUT): A literature review. *Journal of Enterprise Information Management, 28*(3), 443-488. https://doi.org/10.1108/jeim-09-2014-0088

Ranganathan, C., & Ganapathy, S. (2002). Key dimensions of business-to-consumer websites. *Information & Management, 39*(6), 457-465. https://doi.org/10.1016/s0378-7206(01)00112-4

Rui-Hsin, K., & Lin, C. (2018). The Usage Intention of E-Learning for Police Education and Training. *Policing an International Journal of Police Strategies and Management*, *41*(1), 98-112. https://doi.org/10.1108/pijpsm-10-2016-0157

Saleh, A. (2001). Brain hemisphericity and academic majors: A correlation study. *College Student Journal, 35*(2), 193-200.

Salisbury, W. D., Rodney, A. P., Allison, W. P., & David, W. M. (2001). Perceived Security and World Wide Web Purchase Intention. *Industrial Management & Data Systems, 101*(4), 165-176. https://doi.org/10.1108/02635570110390071

Schmitt, N., & Stults, D. M. (1986). Methodology review: Analysis of Multitrait-Multimethod Matrices. *Applied Psychological Measurement*, *10*(1), 1-22. https://doi.org/10.1177/014662168601000101

Seddon, P., & Kiew, M.-Y. (1996). A Partial Test and Development of Delone and Mclean's Model of IS Success. *Australasian Journal of Information Systems, 4*(1), 90-109. https://doi.org/10.3127/ajis.v4i1.379

Sharma, G. P., Verma, R. C., & Pathare, P. (2005). Mathematical modeling of infrared radiation thin layer drying of onion slices. *Journal of Food Engineering, 71*(3), 282-286.

Shih, H.-P. (2004). An Empirical Study on Predicting User Acceptance of E-Shopping on the Web. *Information and Management, 41*(3), 351-368. http://dx.doi.org/10.1016/S0378-7206(03)00079-X

Spreng, R., & Chiou, J. (2002). A cross-cultural assessment of the satisfaction formation process. *European Journal of Marketing, 36*(7/8), 829-839. https://doi.org/10.1108/03090560210430827

Srinivasan, A. (1985). Alternative measures of system effectiveness: associations and implications. *MIS Quarterly*, *9*(3), 243-253. https://doi.org/10.2307/248951

Sun, H., & Zhang, P. (2006). Causal relationships between perceived enjoyment and perceived ease of use: An alternative approach. *Journal of the Association for Information Systems, 7*(9), 618-645.

Teo, H.-H., Chan, H.-C., Wei, K.-K., & Zhang, Z. (2003). Evaluating information accessibility and community adaptivity features for sustaining virtual learning communities. *International Journal of Human-Computer Studies, 59*(5), 671-697. https://doi.org/10.1016/s1071-5819(03)00087-9

Thong, J., Hong, W., & Tam, K. Y. (2002). Understanding user acceptance of digital libraries: what are the roles of interface characteristics, organizational context, and individual differences?. *International Journal of Human-Computer Studies, 57*(3), 215-242. https://doi.org/10.1016/s1071-5819(02)91024-4

Toffler, A. (1970). *Future Shock* (1st ed.). Random House.

Urbach, N., & Müller, B. (2012). The updated DeLone and McLean model of information systems success. In Y. K. Dwivedi, M. R. Wade, & S. L. Schneberger (Eds.). *Information Systems Theory: Explaining and Predicting Our Digital Society* (pp. 1-18). Springer.

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: four longitudinal field studies, *Management Science, 46*(2), 186-204. https://doi.org/10.1287/mnsc.46.2.186.11926

Venkatesh, V., Morris, M., Davis, G., & Davis, F. (2003). User acceptance of information technology: toward a unified view, *MIS Quarterly, 27*(3), 425-478.

Walker, C. E., & Kelly, E. (2007). Online instruction: Student satisfaction, kudos, and pet peeves. Quarterly Review of Distance Education, *8*(4), 309-319.

Wang, K., & Lin, C. L. (2012). The adoption of mobile value-added services: Investigating the influence of I.S. quality and perceived playfulness. *Managing Service Quality*, *22*(2), 184- 208.

Wright, S. (1920). The Relative Importance of Heredity and Environment in Determining the Piebald Pattern of Guinea-Pigs. *Proceedings of the National Academy of Sciences*, *6*(6), 320-332. http://doi.org/10.1073/pnas.6.6.320

Wright, S. (1921). Correlation and causation. *Journal of Agricultural Research, 20*, 557-585.

Wu, J. H., & Wang, Y. M. (2006). Measuring KMS success: A respecification of the DeLone and McLean's model. *Information and Management, 43*(6), 728-739. https://doi.org/10.1016/j.im.2006.05.002

Yuce, A., Abubakar, A. M., & Ilkan, M. (2019). Intelligent Tutoring Systems and Learning Performance Applying Task-technology Fit and I.S. Success Model. *Online Information Review*, *43*(4), 600-616.

Zeithaml, V. A., & Parasuraman, A., & Malhotra, A. (2002). Service quality delivery through web sites: a critical review of extant knowledge. *Journal of the Academy of Marketing Science, 30*(4), 362-375. https://doi.org/10.1177/009207002236911