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**To cite this article:** Yi Li, Rumi Iqbal Doewes, Mohammed Hasan Ali Al-Abyadh & Md. Monirul Islam (2023) How does remote education facilitate student performance? Appraising a sustainable learning perspective midst of COVID-19, *Economic Research-Ekonomiska Istraživanja*, 36:3, 2162561, DOI: [10.1080/1331677X.2022.2162561](https://doi.org/10.1080/1331677X.2022.2162561)

**To link to this article:** <https://doi.org/10.1080/1331677X.2022.2162561>



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Published online: 20 Mar 2023.



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# How does remote education facilitate student performance? Appraising a sustainable learning perspective midst of COVID-19

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## ABSTRACT

The COVID-19 pandemic has brought the concept of a "new normal" to our daily lives and fundamentally affects how we live, learn, and work. In these extraordinary times, the quick move from traditional (face-to-face) learning to online learning is viewed as a paradigm change affecting social, economic, and ecological factors. In this vein, the current study investigates the linkages among system quality, instructor quality, campus learning climate, student satisfaction, and online learning success. We have collected questionnaire-based data from 302 students enrolled in different programs and employed the structural equation modelling (SEM) approach. The results indicate that system and instructor quality is vital in accomplishing campus learning climate and student satisfaction. Manifestly, campus learning climate and student satisfaction also significantly affect online learning success, which helps achieve institutional excellence and positive word of mouth. Virtual learning offers many technological advantages and leads to lower resource consumption than physical learning models. Enlightening the quality of education systems and instructors is crucial in producing value in modern societies for institutional superiority.

## ARTICLE HISTORY

Received 12 August 2022  
Accepted 20 December 2022

## KEYWORDS

COVID-19; remote technologies; online education; sustainability

## JEL CODES

A2; H52; Q01

## 1. Introduction

Online learning is becoming more popular as a technological application in human capital development during the present pandemic. It has been used interchangeably with the terms "online learning," "e-learning," "blended learning," and "distance or remote learning" in recent literature (Isaac et al., 2019). Online learning is described as using digital devices such as desktop and laptop computers, tablets, smartphones,

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and other devices to provide online lessons (Singh & Thurman, 2019). The benefits of online learning are numerous, such as being easy and flexible. Online learning gives schedule flexibility since students may access it anytime and anywhere, making it simple to use (Shah et al., 2021). It also offers a variety of courses and degrees to choose from, giving students freedom while studying. Students will have ample time to interact with more students, communicate effectively and assimilate their knowledge (Raffaghelli et al., 2022). Online learning will also provide an education for those who live far from major cities and cannot afford to study at a university in the developing world (Haverila et al., 2021).

However, the COVID-19 pandemic has tremendously influenced almost aspect of human life (Wen et al., 2022; Yang et al., 2021). This has had a specific effect on how we have to live (Khan et al., 2021), learn (Ahmad et al., 2022), and work (Huang et al., 2022; Shahzad et al., 2021), resulting in the "new normal" in these unusual times (Hussain et al., 2022). This new trend is based on learning and working remotely and gaining widespread support. The popularity of information and communications technology (ICT) has also highlighted the relevance and acceptance of online learning methods as valuable tools in education in various countries during the current pandemic. Various educational institutions prefer online rather than face-to-face learning, which history has never witnessed before and has become a peculiar phenomenon (Raffaghelli et al., 2022). The researcher also highlighted that education is the immediate priority and must include in all response protocols for COVID-19. Further, emergency protocols were also made to minimize the pressure on teachers and students (Shah et al., 2021). Many hurdles face the popularity and viability of online learning in underdeveloped nations. The success of online learning depends on many factors, such as quality of education, student satisfaction, campus environment, and learning climate (Isaac et al., 2019; Shah et al., 2021). The Ministry of Education of the People's Republic of China said it would fiercely promote information-based education and teaching in Chinese institutions to expand the service quality and support online teaching (Chen et al., 2020). The online classroom has become crucial for maintaining regular instructions in response to the epidemic's spread.

Previous research in developed and developing nations has connected green technologies to more flexibility (Fang et al., 2022; Hao et al., 2021), improved access to high-quality learning materials, and self-regulation practices (Raffaghelli et al., 2022; Surma & Kirschner, 2020). Further, extant literature also highlighted the significance of several facets of the educational experience that may contribute to student engagement and satisfaction (Chiodini, 2020; Isaac et al., 2019). However, fewer intentions have been given to system and instructor quality for student satisfaction (Haverila et al., 2021). In this study, system and instructor quality play a significant role in enhancing students' satisfaction and learning climate for online learning success (Oujadouni et al., 2021). In this context, the system's quality is recognized as an important indicator of educational performance and an important policy variable for universities as service providers. Students can be satisfied with institutional service quality (Bakrie et al., 2019). After that, momentum was gained from the proposed model by Wang et al. (2019); further research is needed in the context of online learning. The present study hypothesizes that the online learning climate is also

helpful for online learning success. However, no study or model has yet been derived for assessing the performance of an online education system. Indeed, scholars have stated that while student satisfaction examinations may be beneficial in gauging service quality, they may fail to reflect the breadth of the educational product provided by the institution (Chen et al., 2020; Ouajdouni et al., 2021). At this stage, evaluating the success of online learning systems becomes obligatory. This research aims to discover success factors for e-learning systems during the COVID-19 pandemic. Thus, this research is conducted to answer the following research questions:

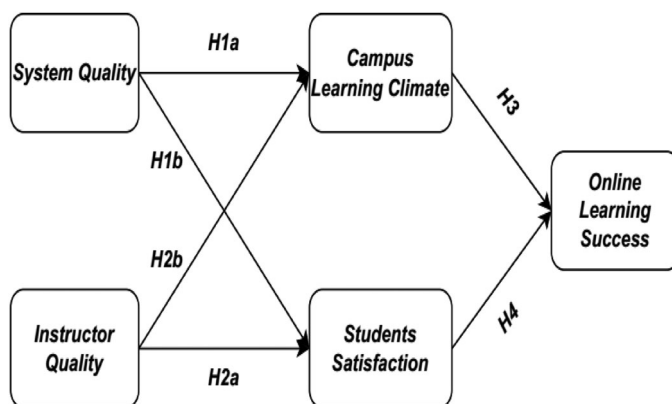
- Could system and instructor quality enhance learning climate and student satisfaction or not?
- How do learning climate and student satisfaction affect online learning success?

This work has significantly contributed to the multidisciplinary field of online learning and higher education. First, this research expands the theoretical understanding based on the self-determination theory (SDT) in Chinese higher education transitioning to online learning. Second, this research aims to empirically associate system and instructor quality in learning climate and student satisfaction for online learning success using structural equation modelling (SEM). This research makes practical contributions that help professionals determine whether online learning is effective for higher education. The theoretical justification and literature review are presented in-depth in the next portion of this study. The methodology is then discussed, briefly defining the nature of the survey, data collecting technique, and target population. The following part explains the statistical methods and procedures used to analyse the data and interpret it in a meaningful way; finally, the last section examines the results obtained and their importance and the discoveries, implications, and gaps for future study.

## **2. Literature review & hypotheses development**

### **2.1. Theoretical background and E-learning**

SDT is regarded as one of the foremost comprehensive and scientifically supported motivational theories (Niemiec & Ryan, 2009). It explains how social and contextual elements help or hinder an individual's motivation to meet their basic psychological requirements (Shah et al., 2021). This theoretical framework focuses on important psychological variables affecting students' learning experiences and satisfaction in the virtual learning environment (Wang et al., 2019). SDT focuses on the human need to fulfil various key psychological needs: competence, autonomy, and relatedness (Ryan & Deci, 2017). Competence is described as the ability to accomplish tasks efficiently and effectively. Autonomy is described as the wish to self-regulate one's own actions or undertakings, whereas relatedness is defined as the feeling of being connected to others. While online learning may give numerous choices for meeting the demand for competency and autonomy, it has been proposed that it may also pose serious challenges in terms of relatedness requirements (Ryan & Deci, 2017; Shah et al., 2021). While passive online learning in Chinese higher education institutions during



**Figure 1.** Framework of the study.  
Source: authors drawing.

the COVID-19 pandemic could effectively encourage students to complete tasks using self-directed learning methods, a lack of interpersonal interaction between teachers and other students may undermine the need for relatedness (Oujdouni et al., 2021). Furthermore, meeting fundamental psychological needs has increased students' learning and motivation, leading to students' participation in reaching learning objectives (Niemic & Ryan, 2009; Wang et al., 2019). As a result, SDT is vindicated as a pertinent and inclusive theoretical agenda for investigating student satisfaction factors for online learning success in the setting of online learning during the COVID-19 epidemic. Below in Figure 1, the research model considers the research hypotheses to be verified in this study.

## 2.2. Hypotheses development

### 2.2.1. System quality

Universities are increasingly aware of the importance of student satisfaction due to a more dynamic and competitive educational environment and several other issues (Khattab & Fraij, 2011). Therefore, focusing on student satisfaction helps institutions re-engineer their quality system to respond to student demands and build a mechanism for regularly assessing how well they meet or surpass student expectations (Oujdouni et al., 2021). System quality is described as easy to use, adequate information, flexible design, and customer-oriented (Pham et al., 2019). Quinn et al. (2009) proposed two major elements influencing service quality: (a) customer satisfaction with the actual service received. Quality must begin with student requirements and finish with student perception. This indicates that a good quality image is based not on the institutional point of view or perception but the student's point of view or perception, and (b) the service truly expected. Past studies highlighted that the system quality of online learning systems had shown distinct features that influenced students' satisfaction and online learning climate (Haverila et al., 2021; Oujdouni et al., 2021; Pham et al., 2019). System and service quality are crucial in building relationships with students (Bakrie et al., 2019). If learners perceive the online education system to be simple and straightforward to understand, they will use it and be pleased

with it (Haverila et al., 2021; Mtebe & Raisamo, 2014). Furthermore, if the system's quality is good compared to others, the quality of education and learning climate is better, enhancing the students' satisfaction. This represents the success of an online learning system. Thus, the following hypotheses were proposed.

H1a: The system quality has significant and positive effects on the learning climate.

H1b: The system quality significantly and positively affects students' satisfaction.

### **2.2.2. Instructor quality**

The instructor's quality and dedication to students' learning have a favourable influence on their satisfaction and pleasure. The quality of faculty is one of the foremost important factors affecting student satisfaction and the success of educational outcomes (Gopal et al., 2021). This study included self-efficacy, attitudes toward e-learning, experiences, and factors that motivated or encouraged instructors to use the online learning system (Almaiah & Alyoussef, 2019). These were discovered among the fundamental aspects that significantly influence students to utilize and adopt an online learning system (Mtebe & Raisamo, 2014). Assume the instructor efficiently presents the lesson and affects the students to do well in their life and studies. This procedure increases student satisfaction and the online learning climate, thus improving the learning process (Gopal et al., 2021; Haverila et al., 2021). Instructors should constantly improve their ability to engage with the most recent academic and technical tools by receiving training in the appropriate usage of technology resources in online learning and creating an online learning class system (Almaiah & Alyoussef, 2019; Shah et al., 2021). Furthermore, the instructor's comprehension of the learners' needs improves student satisfaction (Ouajdouni et al., 2021). As a result, the quality of the instructor may be crucial in inspiring students to utilize and embrace the e-learning system, which enhances student satisfaction and the campus learning climate. Hence, this study proposes

H2a: The instructor quality significantly and positively affects students' satisfaction.

H2b: The instructor quality significantly and positively affects the learning climate.

### **2.2.3. Learning climate to online learning success**

In the context of a students' online learning experience, campus climate might be seen as a social-economic or environmental aspect (Haverila et al., 2021). Some scholars, however, have raised the concept of campus climate as a distinct concept from image and maybe as a precursor to it (Wiers-Jenssen et al., 2002). Besides, to develop a good learning experience, a higher education institution may find it necessary to generate and promote a strong campus environment for students and faculty (Shah et al., 2021), as it has been deliberated as a prognosticator of student satisfaction and business success (Haverila et al., 2021). According to a prior study, students' perceptions of an autonomy-supportive learning environment may help their learning progress (Ouajdouni et al., 2021). Existing literature describes the campus learning environment in terms of how the institution provides and promotes a sense of campus pride, a sense of belonging, and effective communication with students (Haverila

et al., 2021; Wiers-Jenssen et al., 2002). Based on the above discussion, the following hypothesis is proposed.

H3: The learning climate positively and significantly affects online learning success.

#### **2.2.4. Students' satisfaction with online learning success**

Satisfaction is defined as the feeling of nice service completion (Bakrie et al., 2019). Previous researchers described satisfaction as a customer who regularly returns to the same place to fulfil their desire by purchasing a product or receiving a service and having that product or service fulfilled (Pham et al., 2019). Educational institutions view students as consumers, and student satisfaction is similar to customer satisfaction. Student satisfaction results from positive interactions between the teacher and the students. By producing effective outcomes, instructor quality and course material increase student satisfaction (Gopal et al., 2021). Student and online learning performance in terms of learning, motivation, assurance, and retention are affected by satisfaction. The services provided by the institution may differ from one another depending on the services accessible and the educational resources. As a result, it is critical to guarantee that student expectations are satisfied in terms of the services provided to increase student satisfaction (Haverila et al., 2021). Greater student satisfaction with the system leads to increased intention to utilize the online education system, boosting utilization and success (Mtebe & Raisamo, 2014). According to Salinda Weerasinghe et al. (2017), satisfaction is a good predictor of student faithfulness and is both an educational system's result and outcome. Student satisfaction is a student placement characterized by a subjective assessment of educational outcomes and experiences. The past researcher also finds that student satisfaction significantly impacts student loyalty (Bakrie et al., 2019). Therefore, student satisfaction may be designated as a function of relative expertise, perceived success, and the excellent performance of educational services over the study time (Haverila et al., 2021). Therefore, student satisfaction has a major impact on online learning success. Thus the following hypothesis is proposed.

H4: The students' satisfaction positively and significantly affects online learning success.

### **3. Methods**

#### **3.1. Sampling procedures**

The hypotheses of this study model were tested using a survey approach. The study's participants were students from various universities in China. Because of the epidemic, the justification for choosing China is that Chinese universities transitioned to online classrooms for their degree programs following the closure of the physical university campus due to higher authority directives. Students were chosen conveniently as research participants depending on an essential factor. Previously, colleges and universities were solely involved in face-to-face learning; therefore, the quick shift to online learning during the epidemic presents unexpected and unprecedented obstacles for management and students. The total number of disseminated questionnaires was 800, and the total number of returned sets was 350, with 302 replies deemed eligible

**Table 1.** Demographic information.

Attributes	Distribution	Freq.	Percent
Gender	Male	196	64.90
	Female	106	35.10
Age	18 to 23 Years	101	33.44
	24 to 29 Years	146	48.34
	30 or above	55	18.21
Education	Bachelor degree	85	28.15
	Master degree	132	43.71
	Technical degree	48	15.89
	Others	37	12.25
Type of university	Public	181	59.93
	Private	121	40.07

Source: authors estimations.

for the study. This study used a convenience sampling technique to gather data through online correspondence from November 2021 to February 2022. The survey questions were written in English. They were, however, converted into Chinese using the back-translation process (Brislin, 1970). The whole demographic results are shown in Table 1. Giving to Hair et al. (2017), the ten times rule for sample size is "ten times the highest number of structural routes aimed at a given latent construct in a structural model."

### 3.2. Measures

The researcher prepared 26 items questionnaire for this study, separated into three segments. At first, three items were adopted for system quality, and five items were adopted for instructor quality (Ouajdouni et al., 2021). The second part consists of twelve items divided into campus learning climate (Haverila et al., 2021) and student satisfaction (Isaac et al., 2019; Ouajdouni et al., 2021), six items each. In the last section, online learning success was measured by six items (Kim et al., 2022; Ouajdouni et al., 2021). As advised by previous research, constructs were evaluated using the Likert scale, with 1 denoting 'Strongly Disagree' and 7 denoting 'Strongly Agree.' Following Hinkin (1998) approval, we directed pilot research to guarantee the validity and reliability of the accepted constructs within the study environment. Before conducting the final data analysis, the researchers checked common method bias (CMB). CMB arises from the errors or biases in measurement methodology (Podsakoff et al., 2003). Data related to this research's constructs are collected simultaneously from the same respondents; therefore, common method bias may exist. The inner VIF devised by Kock (2015) is a viable test for the existence of the CMB. To identify CMB, this technique employs a comprehensive collinearity test. Variance inflation factor (VIF) is derived by examining each variable dependant only once, and the proposed threshold value is 3.3 Kock (2015). All of the inner VIF values follow the standard. As a result, this study demonstrated that common technique bias is not a severe concern.

### 4. Data analysis and results

As suggested by Hair et al. (2017), PLS-SEM was utilized to evaluate the obtained data. The fundamental advantage of PLS-SEM is that it enables scholars to approximate complex models with several constructs and variables, and structural routes



without imposing data distribution traditions. PLS-SEM is a causal prediction system that prioritizes forecasts while assessing statistical models to explain causal relationships (Sarstedt et al., 2017). This approach is beneficial in many ways. PLS-SEM works proficiently with small sample size, many constructs, and related questions by calculating the separate OLS regression for measurement and structural models (Hair et al., 2017).

#### **4.1. Measurement model**

SEM consists of two different models; "measurement and structural model." The measurement model or outer model is explained by different measures of validity and reliability, for example, composite reliability, whereas the structural model assesses the hypothesized relationship of different constructs of study based on different values like beta coefficient, t value, and p-value (Barclay et al., 1995). Further, it consists of different reliability and validity measures, such as convergent validity, discriminant validity, and internal consistency. Cronbach's alpha (CA) confirms composite reliability (CR) and internal consistency. In contrast, factor loadings measure the construct validity and average variance extracted (AVE) to verify the convergent validity. Moreover, discriminant validity (DV) is measured by the Fronell-Larker criterion (Henseler et al., 2015). To measure the effectiveness of the measurement model, three steps are necessary. First, factor loadings must be evaluated to confirm the reliability of related indexes. Secondly, the CA value provided by the SEM results can consider overall CR. The reliability and validity results have been reported in Table 2, where factor loading of each item surpasses the standard of 0.70. The values of CA are also higher than the standard value of 0.70, CR, and AVE greater than the minimum standard values. These values indicate that the measurement model is good and that the composite dependability is high (Hair et al., 2017). Furthermore, DV assesses how distinct research constructs are within the framework of the same structural model (Hair et al., 2017). Fornell-Larcker's approach compares the square root of AVE to the correlation between designs, and the square root of AVE must be greater than the correlation between the variables to validate the discriminant (Fornell & Larcker, 1981). These outcomes have been reported in Table 3. Henseler et al. (2015) have proposed another method to verify discriminant validity: the HTMT ratio. In the context of PLS-SEM, the HTMT ratio is novel. The HTMT ratio is a more accurate or excellent indicator of discriminant validity than other measures. The suggested HTMT threshold value is 0.85 (Henseler et al., 2015). The HTMT ratio findings are shown in Table 4, and all of them are less than the threshold of 0.85, supporting the discriminant validity.

#### **4.2. Structural model**

The structural model in PLS-SEM is the second model in PLS-SEM. It describes the predicted link between research components. Table 5 illustrates the hypothesis testing results; system quality is positively and significantly associated with campus learning climate and students satisfaction as indicated by the coefficient value and sign

**Table 2.** Constructs' reliability and validity.

Item codes	Factor loadings	CA	CR	AVE	VIF
<i>System quality (SQ)</i>					
SQ1	0.877	0.922	0.912	0.765	2.274
SQ2	0.921				3.262
SQ3	0.962				3.208
<i>Instructor quality (IQ)</i>					
IQ1	0.750	0.897	0.950	0.718	1.885
IQ2	0.880				2.488
IQ3	0.886				3.087
IQ4	0.858				3.428
IQ5	0.830				2.695
<i>Campus learning climate (CLC)</i>					
CLC1	0.738	0.867	0.914	0.732	1.767
CLC2	0.820				2.224
CLC3	0.848				2.647
CLC4	0.860				2.863
CLC5	0.853				2.786
CLC6	0.845				2.796
<i>Students satisfaction (SS)</i>					
SS1	0.897	0.847	0.864	0.661	2.539
SS2	0.905				2.517
SS3	0.901				2.428
SS4	0.830				1.492
SS5	0.833				1.782
SS6	0.844				1.731
<i>Online learning success (OLS)</i>					
OLS1	0.721	0.812	0.851	0.658	1.665
OLS2	0.759				1.733
OLS3	0.875				1.790
OLS4	0.798				2.314
OLS5	0.828				1.861
OLS6	0.776				1.433

Source: authors estimations.

**Table 3.** Fornell-Larcker criterion (discriminant validity).

	CLC	IQ	OLS	SQ	SS
CLC	0.802				
IQ	0.673	0.836			
OLS	0.588	0.694	0.887		
SQ	0.548	0.467	0.406	0.853	
SS	0.512	0.417	0.468	0.708	0.828

Source: authors estimations.

**Table 4.** HTMT ratio (discriminant validity).

	CLC	IQ	OLS	SQ	SS
CLC					
IQ	0.652				
OLS	0.586	0.663			
SQ	0.566	0.494	0.445		
SS	0.571	0.424	0.515	0.781	

Source: authors estimations.

**Table 5.** Hypothesis testing.

Hypothesis paths	Beta value	T-stat	Decision
H1a System Quality -> Campus Learning Climate	0.623	11.722	Accepted
H1b System Quality -> Students Satisfaction	0.745	12.534	Accepted
H2a Instructor Quality -> Campus Learning Climate	0.532	8.242	Accepted
H2b Instructor Quality -> Students Satisfaction	0.375	4.770	Accepted
H3 Campus Learning Climate -> Online Learning Success	0.432	5.588	Accepted
H4 Students Satisfaction -> Online Learning Success	0.470	6.565	Accepted

Source: authors estimations.

( $\beta = 0.623$ ;  $\beta = 0.745$ ), whereas  $t$  and  $p$ -value also confirm the significance of the relationship. Similarly, the relationship between instructor quality is positively and significantly associated with campus learning climate and students satisfaction as depicted by the coefficient sign and value ( $\beta = 0.532$ ;  $\beta = 0.375$ ), whereas  $t$  and  $p$ -value also authorize the significance of the relationship. According to the coefficient value ( $\beta = 0.432$ ), campus learning climate positively relates to online learning success. Results also showed that student satisfaction is positively and significantly related to online learning success with a coefficient value ( $\beta = 0.470$ ). These results are shown in Table 5. Thus, all our hypotheses were accepted. In addition, the fit of the model was confirmed by a widely accepted approach called "standardized root mean square residuals" (SRMR), where a value of  $<0.08$  is recommended for SRMR (Sarstedt et al., 2017). The result is an SRMR value of 0.054, which means our model is fairly good. The coefficient of determinants ( $R^2$ ) and the effect sizes ( $F^2$ ) were also analysed (Hair et al., 2017; Sarstedt et al., 2017). We used Cohen's (1988) procedures to confirm  $F^2$ . The results showed that all exogenous variables adequately affected the endogenous variables. Furthermore, our  $R^2$  value accounts for a 59.2% variance to online learning success. Finally, we used blindfolding processes to examine the  $Q^2$  values to determine the model's predicted accuracy. According to Hair et al. (2017), if the  $Q^2$  is greater than zero, the model has predictive value. The findings demonstrate our model's predictive usefulness.

## 5. Discussion and conclusion

### 5.1. Discussion

Following the SDT framework, this study sought to examine how the system and instructor quality affect online higher education success by improving student satisfaction and campus learning climate in China during COVID-19 in order to discover ways to advance academic accomplishment and satisfaction with online classes. Our findings depict that system quality influences the campus learning climate and enhances student satisfaction, thus supporting H1a and H1b. Our results are affiliated with various studies in a comprehensive context (Isaac et al., 2019; Ouajdouni et al., 2021; Pham et al., 2019; Shah et al., 2021). The previous researcher suggested that system quality is a very effective indicator to measure an institution's quality of education and success (Haverila et al., 2021). Furthermore, the results demonstrate that instructor quality also has meaningful positive effects on the campus learning climate and improves student satisfaction, thus supporting H2a and H2b. These findings suggest that teachers with appropriate computer literacy and a positive attitude about spontaneously interacting with an online learning system will be important in persuading students to exploit it (Almaiah & Alyoussef, 2019). This is constant with previous research (Gopal et al., 2021; Ouajdouni et al., 2021). They indicated that teacher quality is one of the essential aspects that contribute to explaining student happiness and the effectiveness of the educational process.

Further, the relationship of campus learning climate towards online learning success is also accepted, thus supporting H3 and previous research studies (Haverila et al., 2021; Wiers-Jenssen et al., 2002). Furthermore, the relationship of students satisfaction towards online learning success is also accepted, as predicted by (Gopal

et al., 2021; Pham et al., 2019). As satisfaction of consumer plays a particular role in institutional success. The higher the student satisfaction with the system leads to increased intention to utilize the online education system, boosting utilization and success (Mtebe & Raisamo, 2014). According to Shah et al. (2021), giving an aimless learning platform without considering students' psychological and structural demands does not always result in satisfactory student satisfaction. From the institution's perspective, online teaching and learning processes are service activities that require specific goals based on a common vision. The system's efficacy and teacher quality improve educational quality, institutional success, and excellence.

## **5.2. Research implications**

During COVID-19, the Chinese education system has confronted significant obstacles. Thousands of students can't attend physical education due to border closures. In this research, we offer several key implications for the success of online education for both academicians. This is the first research to use structural equation modelling for student satisfaction and learning results in asynchronous online education success during COVID-19. Following the SDT, this research highlights the key contribution of system and instructor quality in producing a higher success rate for an educational institution. This research can also be vital for universities looking to dive deeper into student satisfaction and success. It provides a tangible indication of which factors impact envisaging the university's student satisfaction and behaviour change. The findings suggest that, amid the pandemic, instructor quality is a crucial driver of student happiness during online lessons. Secondly, this research validated the model that campus climate and student satisfaction also plays a magnificent role in achieving better success and outcome for an institution. Our findings imply that online education can be a superior instruction method if tailored to certain systems and instructor quality.

The role of the university environment seems to be a fundamental component for the student experience, and it is influenced by the campus learning climate, technology, and educational experience. According to the results, managers should strive to provide high-quality educational services and a high price ratio to quality. Universities increasingly recognize the importance of student satisfaction as a more competitive and dynamic academic environment that leads to institutional success. Increasing student involvement through online learning technology may also aid increase student academic success as instructors become more capable of responding to psychological demands and emotional well-being during the difficult times of the COVID-19 epidemic. When attending online classes, educators may employ virtual environments to empower students and offer them more authority. Such systems provide more dynamic and individualized responses to student inquiries, making students feel more engaged. Teachers receive regular feedback to help students improve their online learning skills. Additionally, the coronavirus pandemic has influenced the digital revolution of society and the way study and work are conducted during quarantine and social distancing. In the case of online teaching, it has been a sweeping change in which online teaching technologies and systems have become indispensable

resources. Adapting learning processes and styles have been mostly achieved with the help of various learning technologies such as gamification, education, social networks, online learning, etc.

### **5.3. Conclusion**

This study yielded several results that can be considered significant contributions to the knowledge system. Considering the technological transformation and the move from face-to-face to online teaching due to COVID-19, institutions must provide more convenient systems and campus facilities to enhance online learning success. The framework for this study was designed using SDT and existing literature, and the hypotheses were tested using SEM. The association between system quality, instructor quality, campus learning climate, student satisfaction, and online learning success was investigated in this study. The findings show that system and instructor quality play an important role in accomplishing campus learning climate and student satisfaction in a better way. Further, campus learning climate and student satisfaction also significantly affect online learning success, which helps achieve institutional excellence and positive word of mouth. Enlightening the quality of education systems and instructors is crucial in producing value in modern societies for institutional superiority. Finally, our findings might substantially assist the Chinese government in creating an atmosphere conducive to students' views, lifestyles, and objectives in higher education programs. Students are more likely to engage in online learning to improve their academic competence and, as a result, their overall work quality of life.

The study identifies some areas that could be investigated further in the future. Due to a lack of resources and time; nevertheless, a longitudinal approach would yield better results and a more solid conclusion. The scope of this study was limited to Chinese institutions. The researcher can expand the scope of this study beyond geographic bounds in the future, resulting in a more precise result. Finally, this model can be evaluated in a different business sector to improve its generalizability.

### **Disclosure statement**

The authors declare that the research was conducted without any commercial or financial relationships that could be construed as a potential conflict of interest.

### **Funding**

The authors acknowledge the financial supports from the Tianjin Educational Science Planning Research Project (EIE220146).

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