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Factors Influencing the Quality of Higher Vocational Education in Chengdu during the COVID-19

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Abstract

Purpose: The purpose of this study is to explore the key factors that significantly influence the teaching quality of four different types of higher vocational colleges in the Chengdu region after the novel coronavirus epidemic. The conceptual framework proposed a causal relationship among academic aspects, reputation, information quality, instructor quality, perceived value, satisfaction, and loyalty. **Research design, data, and methodology:** The research approach utilized in this study was quantitative, with a sample size of 500 third-year students from various higher vocational colleges. A multistage sampling method was employed, which included judgmental sampling for selection, stratified random sampling for determining the number of students, and convenient sampling for data collection and online/offline survey dissemination. The data analysis used Structural Equation Model (SEM) and Confirmatory Factor Analysis (CFA) techniques to evaluate construct validity, reliability, and model fit. **Results:** The findings of this investigation demonstrated that reputation, information quality, instructor quality, and perceived value significantly influence satisfaction and loyalty, while the impact of academic aspects was found to be insignificant. **Conclusions:** Schools should not blindly invest in academic research but should focus more on the teaching interaction between students and teachers, the application of information technology in school management and the teaching process, and improving students' skills in school.

Keywords : Quality, Higher Education, Satisfaction, Loyalty, COVID-19

JEL Classification Code: E44, F31, F37, G15

1. Introduction

Every element of human existence has been impacted by modern technology. This is true for every field of endeavor, and higher education is no different. One thing is certain: any improvement to academic instruction must be built on technology assistance. Like the previous pandemics of MERS and SARS, COVID-19 or coronavirus cannot be restricted to a certain geographic area. WHO's Worldwide Health Regulations Emergency Committee designated COVID-19 a public health emergency of international significance in 2020 (World Health Organization, 2020) and later declared it a pandemic in less than two months (Ducharme, 2020). COVID-19 is a highly contagious virus that has spread rapidly over the globe, affecting businesses in both large and small communities. A transition in the teaching-learning process from a conventional classroom to an online format is one of the affected sectors (Liguori & Winkler, 2020). Schools and universities that govern a population of people have taken several precautionary measures to prevent the spread of the disease, such as enhancing cleaning and sanitizing of common areas on the campuses, promoting health concerns such as social distancing, temperature measurement, and encouraging staff or students to take leave if they are feeling unwell.

As the severity of the pandemic progressed, so did the

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severity of the precautionary measures, including the cancellation of large-scale events like lectures, communities, and fairs, as well as the temporary closure of educational institutions and the diversion of instruction to the Internet. Schools and universities must figure out how to provide excellent instruction through online learning and how to implement online learning quickly and efficiently for their students so that academic continuity may be maintained. Educational institutions must find new and creative ways to adapt to the shift to a digital learning environment and reap the benefits that come with it. Universities in China affected by COVID-19 are also included. With the development of the Internet this year, broadband and Internet access rate are rising. As shown in Figure 1, this also gives an excellent basis for teaching via the Internet and at a distance. Online education has risen dramatically in China's private and vocational education markets during the last several years. The pandemic necessitated the introduction of online learning. Dingtalk, produced by the Alibaba group, and Tencent classroom, a live-streaming platform for lectures, are two of China's most popular online learning tools (Mao & Zhang, 2020). Therefore, the factors that affect the quality of higher vocational education in this unique environment have different characteristics.

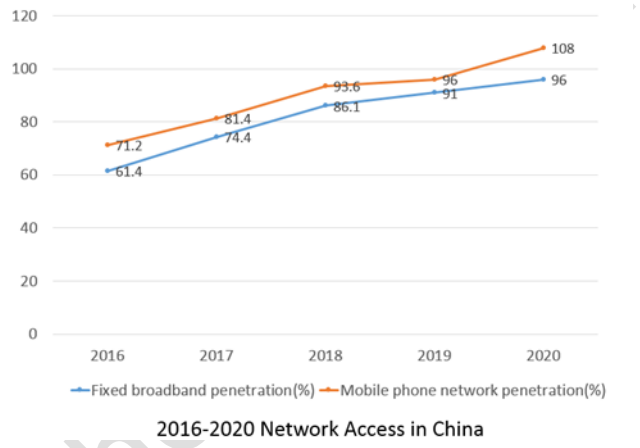

Figure 1: 2016-2020 Network Access in China
Source: Record Trend (2022)

2. Literature Review

2.1 Satisfaction

According to Ataburo et al. (2017), customer happiness may be quantified by how effectively their needs are met. Customer satisfaction is a manifestation of a customer's assessment, fondness, or emotional reaction to the products or services they have obtained. Fulfilling or surpassing customer expectations, delivering a good customer experience, and considering the customer's emotional well-being are all factors that can enhance satisfaction levels. Businesses prioritizing customer satisfaction are more likely to retain customers, foster brand loyalty, and achieve long-term success. In a study conducted by Hakanen et al. (2006), they explored the connection between job satisfaction and burnout. The study revealed that individuals who experience high levels of job satisfaction tend to have lower levels of burnout. Thus, indicating that job satisfaction is inversely related to burnout and exhaustion (Min et al., 2022).

Diener et al. (1999) conducted a study that revealed that overall satisfaction with life is positively associated with experiencing positive emotions and negatively associated with experiencing negative emotions. Additionally, the study found that individuals who reported greater life satisfaction were more inclined to partake in activities that enhanced their well-being, such as physical exercise and social interaction with friends and family. According to Panda et al. (2019), educational institutions must identify the factors that are highly linked to student satisfaction and implement measures to enhance them.

2.2 Academic Aspects

According to Abdullah (2005), this element indicates academic obligations and highlights crucial traits such as having a pleasant attitude, effective communication skills, enabling enough consultation, and offering regular feedback to students.

Academic aspects are central to the essence of tertiary education (Angell et al., 2008). These endeavors encompass proficient and captivating educators, imparting applicable proficiencies, frequent availability of instructional personnel, diverse literature and periodicals, portable abilities, a distinguished academic curriculum, and sufficient computer and online resources. Academic aspects include educational assistance, administration, pedagogy, evaluation, organization, and appraisal, learning resources, and individual advancement (Fernandes & Ross, 2013).

The current findings from research affirm the crucial role of academia in the value-oriented university setting (Sultan & Wong, 2013), highlighting the need for further emphasis on this aspect. Thomas and Galambos (2004) conducted a study at a public institution in America, revealing that the academic components and facilities significantly predict students' overall happiness. Apart from scholastic factors, Rowley (1996) noted that other aspects, including the learning environment, opportunities for self-improvement, and available facilities and services, also play a vital role in shaping students' satisfaction levels. Academic professionals are more likely to favor web technologies that enable them to acquire knowledge and enhance their image (Mewburn &

Thomson, 2013). Therefore, universities must provide appropriate technological tools and resources to facilitate their students and faculty members' academic and personal growth (Liu et al., 2019; Vovides et al., 2019). Thus, a hypothesis is set:

H1: Academic aspects have a significant impact on satisfaction.

2.3 Reputation

According to Deephouse (2000), organizational reputation is defined as the assessments made by stakeholders regarding a company's ability to meet their expectations over time consistently. Bhattacharya and Elsbach (2002) describe brand reputation in the business as customers' positive opinions of the distinguishing characteristics of one brand over another, which directly influences their willingness to pay. Bromley (2002) defines reputation as an individual's standing in the eyes of other social group members.

A positive brand image significantly contributes to an institution's good reputation. The image of the university that stakeholders hold is known as the university brand image. In contrast, reputation refers to the level of trust stakeholders have in an institution's ability to meet their expectations (Nguyen & LeBlanc, 2001b). As Angell et al. (2008) noted, a service's most mentioned features are accessible to qualified instructors, cost-effective education, and attending a reputable institution to obtain a degree. Therefore, this study produces a hypothesis:

H2: Reputation has a significant impact on satisfaction.

2.4 Information Quality

According to DeLone and McLean (2003) research, the assessment of information includes "semantic success" and the assessment of "utilization, user happiness, and individual impacts. Ghazal et al. (2017) defined the quality of information as the quality provided by the Learning Management System. "Information quality is defined as the system's ability to convey meaning and data accurately (Wang & Lin, 2012). Thus, it is essential for information systems to not only provide data but also to ensure that the data is of high quality and accurately conveys the intended meaning to users.

Based on the empirical research conducted by Bharatia and Chaudhury (2004), it was found that the quality of both information and the system significantly predicted the level of satisfaction with the decision-making process. Additionally, Roca et al. (2006) discovered that web quality positively impacted user satisfaction, specifically in the context of online tax-filing systems (Chen, 2010). The system's quality, materials, and services are three fundamental antecedents that define satisfaction and predict the desire to continue using e-learning in academic libraries (Demiray & Sharma, 2015; Wang & Chen, 2009). Therefore, institutions must prioritize the quality of their systems and materials to ensure user satisfaction and engagement. Hence, a hypothesis is developed:

H3: Information quality has a significant impact on satisfaction.

2.5 Instructor Quality

The significance of instructors in both conventional and e-learning methods has long been recognized as one of the most important factors in determining the overall effectiveness of the learning process (Seok, 2008). The effectiveness of teachers is measured by how well they combine their technical and pedagogical expertise in delivering online courses via different e-learning platforms (Mtebe & Raphael, 2018).

Numerous studies have established a positive correlation between the quality of delivery provided by instructors (responsiveness, enthusiasm, attitude, and communication style) and the level of satisfaction that users report with an e-learning system (Lee et al., 2018; Liaw & Huang, 2013). However, there have been few studies that examine the perceptions of both instructors and students regarding the usefulness and practicality of the course (Rughoobur-Seetah & Hosanoo, 2021). Accordingly, the researcher proposes a hypothesis:

H4: Instructor quality has a significant impact on satisfaction.

2.6 Perceived Value

According to Zeithaml's (1988) definition, perceived value is the customer's overall evaluation of a product's usefulness, which considers their perceptions of what they receive and what is promised. Other researchers have defined perceived value as the trade-off between the benefits received, or utility, and the price paid for the product (Jiménez-Castillo et al., 2013).

Technological advancements have made online communication more efficient, increasing market share (Momen et al., 2019) and emphasizing its critical role in the success of any organization (Besseah et al., 2017). Universities' blogs have been identified as a better source of information for students in Higher Education than institution websites (Momen et al., 2019). The concept of perceived value has also been linked to job satisfaction (Clemes et al., 2013). Additionally, Snoj et al. (2004) explain that value is

derived from the composite usefulness of the product or service compared to the sacrifices made to obtain it. Similarly, the trade-off approach has been proposed to examine students' perceived value in higher education. It represents an overall evaluation of the utility of educational services compared to other methods of achieving goals (Dlačić et al., 2014). Consequently, a hypothesis is suggested:
H5: Perceived value has a significant impact on satisfaction.

2.7 Loyalty

The concept of loyalty is a crucial variable studied extensively in various fields, such as marketing, consumer behavior, and organizational behavior. It pertains to the inclination of customers or employees to remain devoted to a particular brand or organization. This literature review aims to examine the current state of research on the loyalty variable and its implications for diverse fields (Oliver, 1997).

Nitzan and Libai (2011) investigated the influence of social factors on customer retention, as reported in the Journal of Marketing. The authors presented a new conceptual framework that integrated traditional customer loyalty models with social influence. They contended that social factors, such as peer influence and social support, could significantly impact customer retention rates. The research conducted by Nitzan and Libai aimed to provide insights into the intricate interplay between social forces and consumer behavior, potentially benefiting marketers seeking to optimize customer satisfaction and loyalty.

Chen and Chang (2013) conducted a study that examined the relationship between green marketing and customer loyalty. The findings revealed that greenwash, or false environmental claims, can reduce customer loyalty by causing confusion and perceived risk. As a result, a hypothesis is concluded:
H6: Satisfaction has a significant impact on loyalty.

3. Research Methods and Materials

3.1 Research Framework

Plano Clark (2017) emphasized that the conceptual framework serves as a blueprint for the research project. Hair et al. (2010) explained that the conceptual framework identifies the variables and their relationships to the studied constructs. Similarly, McGaghie et al. (2001) stated that the framework has two purposes: to identify variables and clarify their relationships. Additionally, the conceptual framework sets the foundation for presenting the specific research objective. According to Camp (2001), a conceptual framework represents a paradigm that accurately depicts how a phenomenon naturally develops. Moreover, a conceptual framework provides an easy-to-understand visual aid for conducting research (Imenda, 2017). Therefore, the present study's conceptual framework was constructed by summarizing relevant literature and organizing various related variables, as illustrated in Figure 2.

Figure 2: Conceptual Framework

H1: Academic aspects have a significant impact on satisfaction.
H2: Reputation has a significant impact on satisfaction.
H3: Information quality has a significant impact on satisfaction.
H4: Instructor quality has a significant impact on satisfaction.
H5: Perceived value has a significant impact on satisfaction.
H6: Satisfaction has a significant impact on loyalty.

3.2 Research Methodology

Using the quantitative multistage sampling method, the researchers distributed the questionnaire online to students studying in four higher vocational colleges in Chengdu, China. The survey had three parts: screening questions, 5-point Likert scale questions to measure five proposed variables, and demographic questions. Content validity was conducted for an expert rating of the item-objective congruence (IOC) index. All scale items meet the minimum requirements of IOC 0.6. Cronbach's alpha coefficient reliability test was used to examine a pilot test (n=50). A value above 0.7 Cronbach α can be considered acceptable for construct reliability. Confirmatory Factor Analysis (CFA) was used to test convergence accuracy and validation. The structural Equation Model (SEM) was used to examine the effect of variables.

3.3 Population and Sample Size

This research study focuses on third-year pupils enrolled in higher vocational colleges, as they are more familiar with educational coursework than first-year students. Kline (2011) indicated that the minimum sample size is recommended to be 200. A total of 511 questionnaires were collected during the research phase, and subsequently, 500

surveys were selected based on their level of questionnaire quality.

3.4 Sampling Technique

The researcher used multistage sampling, using purposive or judgmental sampling, to select four different types of higher vocational colleges. Then, stratified random sampling was applied to use the student number total of 13,458, as shown in Table 1. Afterward, the researcher employed convenience sampling to distribute the questionnaire online.

Table 1: Sample Units and Sample Size

Target middle school	Population Size	Sample Size
Sichuan Post and Telecommunication College	1891	70
Sichuan Vocational College of Finance and Economics	2330	87
Chengdu Agricultural College	4470	166
Sichuan Changjiang Vocational College	4767	177
Total	**13458**	**500**

Source: Constructed by author

4. Results and Discussion

4.1 Demographic Information

The profile of the demographic targets 500 participants and is concluded in Table 2. Male respondents represent 54.6%, and female respondents account for 45.4%. For the age group, the biggest segment in this research was 19-21 years old, representing 54% of respondents, followed by 41.8.% of 16-18 years old, 3.6% of 22-24 years old, and 0.6 % of over 24 years old. Regarding student source of respondents, the major group was Sichuan province of, 67.8%; another group was another province of 32.2%. According to the enrollment type, 56.2% of the students come from the countryside, and 43.8% come from the city. In terms of major types, most students study science, accounting for 49.4%, followed by liberal arts, accounting for 44.4%, and other disciplines, accounting for 6.2%. According to the types of schools, before students receive higher education, 52.8% of them come from vocational colleges, and the other students come from ordinary high schools, accounting for 47.2%. Regarding admission methods, the students who passed the college entrance examination accounted for 49.6%, the students who took the skills examination accounted for 44.8%, and the rest accounted for 5.6%.

Table 2: Demographic Profile

Demographic and General Data (N=500)		Frequency	Percentage
Gender	Male	273	54.6%
	Female	227	45.4%
Age	16-18 years old	209	41.8%
	19-21 years old	270	54%
	22-24 years old	18	3.6%
	More than 24 years old	3	0.6%
Student source	Sichuan province	339	67.8%
	Another province	161	32.2%
Enrollment type	City	219	43.8%
	Countryside	281	56.2%
Major type	Liberal arts	222	44.4%
	Science	247	49.4%
	Others	31	6.2%
School type	High school	236	47.2%
	Vocational school	264	52.8%
Admission method	Entrance examination	248	49.6%
	Separate enrollment	224	44.8%
	others	28	5.6%

Source: Constructed by author

4.2 Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis (CFA) was utilized in this study to evaluate the measures' validity. The findings showed that all items within each variable had significant factor loadings, indicating discriminant validity. The goodness of fit was evaluated based on acceptable values and the significance of factor loadings, following the guidelines of Hair et al. (2006). Factor loadings were considered acceptable if they surpassed 0.30 with a p-value lower than 0.05. The construct reliability was above the suggested cut-off point of 0.7, and the average variance extracted was above the recommended cut-off of 0.5 (Fornell & Larcker, 1981), as demonstrated in Table 3. All estimates were found to be statistically significant.

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
Academic aspects (AA)	Ali et al. (2016)	6	0.909	0.517-0.929	0.910	0.637
Reputation (R)	Ali et al. (2016)	4	0.761	0.599-0.744	0.764	0.449
Information quality (IQ)	Rughoobur-Seetah and Hosanoo (2021)	5	0.864	0.661-0.813	0.867	0.567
Instructor quality (INSQ)	Rughoobur-Seetah and Hosanoo (2021)	4	0.813	0.637-0.797	0.814	0.525
Perceived value (PV)	Demir et al. (2020)	4	0.780	0.596-0.736	0.780	0.472
Satisfaction (S)	Ali et al. (2016)	5	0.787	0.596-0.686	0.788	0.427
Loyalty (L)	Ali et al. (2016)	3	0.754	0.636-0.762	0.763	0.519

To further evaluate the validity of the CFA model, several goodness-of-fit indices, such as GFI, AGFI, NFI, CFI, TLI, and RMSEA, were used and presented in Table 4. These indices provide an overall indication of how well the data fit the proposed model. The values for all indices surpassed the suggested thresholds, confirming the measures' convergent and discriminant validity.

Table 4: Goodness of Fit for Measurement Model

Fit Index	Acceptable Criteria	Statistical Values Adjustment
CMIN/ DF	< 5.00 (Al-Mamary & Shamsuddin, 2015; Aw ang, 2012)	1301.771/413 or 3.152
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.856
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.827
NFI	≥ 0.80 (Wu & Wang, 2006)	0.828
CFI	≥ 0.80 (Bentler, 1990)	0.875
TLI	≥ 0.80 (Sharma et al., 2005)	0.859
RMSEA	< 0.08 (Pedroso et al., 2016)	0.066
Model summary		**Acceptable Model Fit**

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = Goodness-of-fit index, AGFI = Adjusted goodness-of-fit index, NFI = Normed fit index, CFI = Comparative fit index, TLI = Tucker-Lewis index and RMSEA = Root mean square error of approximation
Source: Created by the author.

Table 5 reveals that convergent validity was achieved since the square root of the average variance extracted exceeded the corresponding correlation values for each variable. This indicates that the measures were highly related and assessed the same construct.

Table 5: Discriminant Validity

	AA	R	IQ	INSQ	PV	S	L
AA	**0.798**						
R	0.129	**0.670**					
IQ	0.183	0.427	**0.753**				
INSQ	0.160	0.118	0.284	**0.725**			
PV	0.142	0.317	0.272	0.191	**0.687**		
S	0.118	0.377	0.371	0.238	0.337	**0.653**	
L	-0.049	0.090	0.033	0.009	-0.033	0.286	**0.720**

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

4.3 Structural Equation Model (SEM)

As described by Hair et al. (2010), SEM is a statistical method that confirms the causal relationships among variables in a proposed model and considers measurement errors in the structural coefficient. In Figure 3, the structural model was adjusted by incorporating correlations between the measurement errors of items within the constructs. Goodness-of-fit indices for SEM are presented in Table 6. The CMIN/DF ratio should not exceed 3, and GFI and CFI should be higher than 0.8, as Greenspoon and Saklofske (1998) recommended. Using SPSS AMOS version 26 to calculate the model and adjust it, the results of the fit indices indicated a good fit, with CMIN/DF = 3.002, GFI = 0.853, AGFI = 0.829, NFI = 0.831, CFI = 0.880, TLI = 0.869, and RMSEA = 0.063, all of which meet the acceptable values mentioned in Table 6.

Table 6: Goodness of Fit for Structural Model

Index	Acceptable	Statistical Before Values Adjustment	Statistical Values After Adjustment
CMIN/DF	< 5.00 (Al-Mamary & Shamsuddin, 2015; Awang, 2012)	1552.984/428 or 3.628	1278.712/426 or 3.002
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.829	0.853
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.802	0.829
NFI	≥ 0.80 (Wu & Wang, 2006)	0.795	0.831
CFI	≥ 0.80 (Bentler, 1990)	0.842	0.880
TLI	≥ 0.80 (Sharma et al., 2005)	0.828	0.869
RMSEA	< 0.08 (Pedroso et al., 2016)	0.073	0.063
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, NFI = Normed fit index, CFI = Comparative fit index, TLI = Tucker-Lewis index and RMSEA = Root mean square error of approximation
Source: Created by the author.

4.4 Research Hypothesis Testing Result

The standardized path coefficient (β) and t-value of the SEM presented in Table 7 were used to test the research hypotheses and determine the results. Most of the hypotheses were significant at a p-value below 0.5, except for H2, which examined the relationship between academic aspects (AA) and satisfaction (S) and was not supported.

Table 7: Hypothesis Results of the Structural Equation Modeling

Hypothesis	(β)	t-value	Result
H1: AA → S	0.015	0.307	Not Supported
H2: R→ S	0.290	5.047*	Supported
H3: IQ → S	0.259	4.749*	Supported
H4: INSQ → S	0.153	2.885*	Supported
H5: P → S	0.288	4.912*	Supported
H6: S→ L	0.236	3.974*	Supported

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

The study's results can be explained as follows:

The results regarding **H1** fail to support the notion that Academic Aspects significantly influence satisfaction, as evidenced by the common coefficient value of 0.015. These findings do not effectively substantiate the idea that academic satisfaction plays a crucial role in shaping students' satisfaction with the quality of higher education in colleges, which contradicts prior literature on the topic (Annamdevula & Bellamkonda, 2016; Huili & Jing, 2012; Jiewanto et al., 2012).

The standardized path coefficient value of 0.290 confirms **H2**, demonstrating that reputation is crucial in determining satisfaction. These findings indicate that reputation substantially influences satisfaction with the quality of higher education (Manohar et al., 2019).

The results also support **H3**, as the common coefficient value of 0.259 demonstrates a significant association between information quality and satisfaction. These findings suggest that the quality of the information received and the perception of obtaining information during school study directly impact students' satisfaction with higher education services (Rughoobur-Seetah & Hosanoo, 2021).

The findings confirm the significance of instructor quality as one of the key factors contributing to perceived usefulness, with **H4** having the highest standardized path coefficient value of 0.153. Previous studies have indicated that instructor quality plays a direct role in enhancing students' satisfaction since it is the primary focus of students in the teaching activities of higher education (AbuSeman et al., 2019).

H5 demonstrated a significant association between perceived value and satisfaction, as evidenced by the standard coefficient value of 0.288. These findings indicate that perceived value can measure the pleasure derived from products or services, particularly in the context of students' satisfaction (Demirgünescedil, 2015).

The results support **H6**, indicating a significant relationship between satisfaction and loyalty, with a common coefficient value of 0.236. Previous literature has shown a strong positive correlation between customer happiness and loyalty (Athiyaman, 1997; El-Adly & Eid, 2016).

5. Conclusion and Recommendation

5.1 Conclusion and Discussion

This research highlights the importance of satisfaction and loyalty among students in higher vocational colleges in Chengdu, China. The study developed hypotheses within a conceptual framework and gathered data through a questionnaire survey completed by 500 students who had studied for at least two years. Confirmatory factor analysis (CFA) was used to evaluate the reliability and validity of the proposed concept matrix, and structural equation modeling (SEM) was utilized to identify the key factors that impact satisfaction and loyalty.

The study's outcomes align with prior research, demonstrating that school reputation is the most crucial factor influencing student satisfaction, affecting their loyalty. This could be attributed to the school's reputation being established through technology and social networks, resulting in a shared understanding among students. Information quality, teacher quality, and perceived value also substantially impact student satisfaction with the quality of higher vocational education, possibly because these factors are more immediately accessible to students. However, academic aspects do not significantly influence student satisfaction, likely due to the priority placed on practical skills development over academic research proficiency in vocational and technical colleges. These findings suggest that post-pandemic factors affecting the quality of education in higher vocational colleges have undergone significant changes, with students placing more emphasis on services that directly impact their future employment prospects, such as skills and values development.

5.2 Recommendation

In the context of higher vocational education, it is essential to recognize the critical importance of practical training as the most vital factor in developing students' skills. However, it is equally crucial to avoid overemphasizing

practical training at the expense of other critical factors that affect the overall quality of vocational education. To achieve this, educators and administrators must ensure that students have access to various learning experiences that foster comprehensive skills.

One way to accomplish this is by providing ample opportunities for students to engage in hands-on learning experiences such as internships, apprenticeships, and on-the-job training. These practical experiences not only help students develop the necessary skills but also prepare them for the demands of the workforce. However, practical training alone is not enough. Integrating theoretical concepts and real-life examples is crucial to help students understand the practical applications of the theories they are learning.

Collaboration among students is another essential aspect of vocational education that helps foster teamwork and communication skills vital in the workplace. This can be achieved through group work, pair work, and other activities encourage students to work together towards a common goal.

Mentorship programs are also valuable tools that can give students insights into real-world challenges and opportunities in their chosen fields. By connecting students with experienced professionals, mentorship programs can offer unique learning experiences beyond what can be learned in the classroom.

Finally, career-oriented guidance and counseling programs are essential in helping students make informed decisions about their career paths. By focusing on students' interests and goals, educators and administrators can ensure that students develop the skills and knowledge needed to succeed in their chosen fields.

In summary, prioritizing practical training in higher vocational education is crucial, but it is also important to avoid overemphasizing practical training at the expense of other vital factors. By providing a comprehensive set of learning experiences that incorporate theoretical concepts, real-life examples, collaboration, mentorship, and career-oriented guidance, educators, and administrators can help students develop the skills they need to succeed in the workforce.

5.3 Limitation and Further Study

The research focused on four distinct types of higher vocational and technical colleges in Chengdu, which may limit the generalizability of the findings to other types of colleges or even to different cohorts within the same colleges. Notably, the current study only included one-year students whose perceptions and attitudes toward their academic experiences may differ from those of higher-grader students. Therefore, caution should be exercised in applying these findings to other student populations. To enhance the external validity of the research, future studies could expand the sample size and include students from multiple grades better to understand the evolving nature of student satisfaction over time. Furthermore, exploring the unique features of different types of vocational and technical colleges is worthwhile to determine how these factors impact student satisfaction and loyalty.

References

Abdullah, F. (2005). HEdPERF versus SERVPERF: the quest for ideal measuring instrument of service quality in higher education sector. *Quality Assurance in Education*, *13*(4), 305-328. https://doi.org/10.1108/09684880510626584

AbuSeman, S. A., Hashim, M. J., Mohd Roslin, R., & Mohd Ishar, N. I. (2019). Millennial Learners' Acceptance and Satisfaction of Blended Learning Environment. *Asian Journal of University Education*, *15*(3), 129-141. https://doi.org/10.24191/ajue.v15i3.04

Ali, F., Zhou, Y., Hussain, K., Nair, P. K., & Ragavan, N. A. (2016). Does higher education service quality effect student satisfaction, image, and loyalty? A study of international students in Malaysian public universities. *Quality assurance in education*, *24*(1), 70-94. https://doi.org/10.1108/qae-02-2014-0008

Al-Mamary, Y. H., & Shamsuddin, A. (2015). Testing of The Technology Acceptance Model in Context of Yemen, *Mediterranean Journal of Social Sciences*, *6*(4), 268-273. https://doi.org/10.5901/mjss.2015.v6n4s1p268

Angell, R. J., Heffernan, T. W., & Megicks, P. (2008). Service quality in postgraduate education. *Quality Assurance in Education*, *16*(3), 236-54. https://doi.org/10.1108/09684880810886259

Annamdevula, S., & Bellamkonda, R. S. (2016). Effect of student perceived service quality on student satisfaction, loyalty, and motivation in Indian universities. *Journal of Modelling in Management*, *11*(2), 488-517. https://doi.org/10.1108/jm2-01-2014-0010

Ataburo, H., Muntaka, A. S., & Quansah, E. K. (2017). Linkages among e-service quality, satisfaction, and usage of e-services within higher educational environments. *International Journal of Business and Social Research*, *7*(3), 10-26. https://doi.org/10.18533/ijbsr.v7i3.1040

Athiyaman, A. (1997). Linking student satisfaction and service quality perceptions: the case of university education. *European journal of marketing*, *31*(7), 528-540. https://doi.org/10.1108/03090569710176655

Awang, Z. (2012). *Structural equation modeling using AMOS graphic*. Penerbit University Technology MARA.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*(2), 238-246. https://doi.org/10.1037/0033-2909.107.2.238

Besseah, B., Achiro, D., Mhando, J., & Salau, S. A. (2017). Embedding digital and research-literacy support program into postgraduate studies curriculum: a proposed program for Sub-Saharan African postgraduate schools. *Library Review*, *66*(8-9), 586-594. https://doi.org/10.1108/lr-02-2017-0012

Bharatia, P., & Chaudhury, A. (2004). An empirical investigation of decision-making satisfaction in web-based decision support systems. *Decision support systems*, *37*(2), 187-197. https://doi.org/10.1016/s0167-9236(03)00006-x

Bhattacharya, C. B., & Elsbach, K. D. (2002). Us versus them: The roles of organizational identification and disidentification in social marketing initiatives. *Journal of Public Policy & Marketing*, *21*(1), 26-36. https://doi.org/10.1509/jppm.21.1.26.17608

Bromley, D. B. (2002). An examination of issues that complicate the concept of reputation in business studies. *International Studies of Management & Organization*, *32*(3), 65-81. https://doi.org/10.1080/00208825.2002.11043666

Camp, W. G. (2001). Formulating and Evaluating Theoretical Frameworks for Career and Technical Education Research. *Journal of Vocational Education Research, 26*(1), 4-25. https://doi.org/10.5328/jver26.1.4

Chen, C.-W. (2010). Impact of quality antecedents on taxpayer satisfaction with online tax-filing systems-An empirical study. *Information & Management*, *47*(5-6), 308-315. https://doi.org/10.1016/j.im.2010.06.005

Chen, Y. S., & Chang, C. H. (2013). Green organizational identity's influence on green innovation. *Social Behavior and Personality: an international journal*, *41*(8), 1297-1304. https://doi.org/10.1108/md-09-2011-0314

Clemes, M. D., Cohen, D. A., & Wang, Y. (2013). Understanding Chinese university students' experiences: an empirical analysis. *Asia Pacific Journal of Marketing and Logistics*, *25*(3), 391-427. https://doi.org/10.1108/apjml-07-2012-0068

Deephouse, D. L. (2000). Media reputation as a strategic resource: An integration of mass communication and resource-based theories. *Journal of management*, *26*(6), 1091-1112. https://doi.org/10.1177/014920630002600602

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*, *19*(4), 9-30.

Demir, A., Pesque-Cela, V., Altunbas, Y., & Murinde, V. (2020). Fintech, financial inclusion, and income inequality: a quantile regression approach. *European Journal of Finance, 28*(2), 1-22. https://doi.org/10.1080/1351847x.2020.1772335

Demiray, U., & Sharma, R. C. (2015). MOOCs: A Review of the State-of-the-Art. Eurasia Journal of Mathematics, *Science & Technology Education, 11*(5), 993-1006. https://doi.org/10.12973/eurasia.2015.1389a

Demirgünescedil, B. K. (2015). Relative importance of perceived value, satisfaction, and perceived risk on willingness to pay more. *International Review of Management and Marketing*, *5*(4), 211-220.

Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, *125*(2), 276-302. https://doi.org/10.1037/0033-2909.125.2.276

Dlačić, J., Arslanagić, M., Kadić-Maglajlić, S., Marković, S., & Raspor, S. (2014). Exploring perceived service quality, perceived value, and repurchase intention in higher education using structural equation modelling. *Total Quality Management & Business Excellence*, *25*(1-2), 141-157. https://doi.org/10.1080/14783363.2013.824713

Ducharme, J. (2020). *World Health Organization Declares COVID-19 a 'Pandemic.' Time.* https://time.com/5791661/who-coronavirus-pandemic-declaration/

El-Adly, M. I., & Eid, R. (2016). Factors affecting students' satisfaction and achievement in electronic learning environments: A review of the literature. *Journal of Education and Practice*, *7*(3), 78-88.

Fernandes, C., & Ross, K. (2013). Understanding student satisfaction and loyalty in the UAE HE sectors. *International Journal of Educational*. *27*(6), 613-630. https://doi.org/10.1108/ijem-07-2012-0082

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39-50. https://doi.org/10.1177/002224378101800104

Ghazal, S., Aldowah, H., & Umar, I. (2017). Critical Factors to Learning Management System Acceptance and Satisfaction in a Blended Learning Environment. In F. Saeed, N. Gazem, S. Patnaik, A. S. S. Balaid & F. Mohammed (Eds.), *Research Trends in Information and Communication Technology, Lecture Notes on Data Engineering and Communication Technologies* (pp. 688-698). Springer. https://doi.org/10.1007/978-3-319-59427-9_71

Greenspoon, P. J., & Saklofske, D. H. (1998). Confirmatory factor analysis of the multidimensional students' life satisfaction scale. *Personality and Individual Differences 25*(5), 965-972. https://doi.org/10.1016/s0191-8869(98)00115-9

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

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

Hakanen, J. J., Bakker, A. B., & Schaufeli, W. B. (2006). Burnout and work engagement among teachers. *Journal of School Psychology*, *43*(6), 495-513. https://doi.org/10.1016/j.jsp.2005.11.001

Huili, Y. A. O., & Jing, Y. U. (2012). Empirical research and model building about customer satisfaction index on postgraduate education service quality. *Canadian Social Science*, *8*(1), 108-113.

Imenda, S. (2017). In Search of a Psychology of Teaching and Learning for the 21st Century. *Journal of Psychology*, *8*(2), 83-94. https://doi.org/10.1080/09764224.2017.1409330

Jiewanto, A., Laurens, C., & Nelloh, L. (2012). Influence of service quality, university image, and student satisfaction toward WOM intention: A case study on Universitas Pelita Harapan Surabaya. *Procedia-Social and Behavioral Sciences*, 40, 16-23. https://doi.org/10.1016/j.sbspro.2012.03.155

Jiménez-Castillo, D., Sánchez-Fernández, R., & Iniesta-Bonillo, M. Á. (2013). Segmenting university graduates on the basis of perceived value, image, and identification. *International Review on Public and Nonprofit Marketing*, *10*(3), 235-252. https://doi.org/10.1007/s12208-013-0102-z

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). Guilford Press.

Lee, S. J., Lee, H., & Kim, T. T. (2018). A study on the instructor role in dealing with mixed contents: How it affects learner satisfaction and retention in e-learning. *Sustainability*, *10*(3), 850. https://doi.org/10.3390/su10030850

Liaw, S.-S., & Huang, H.-M. (2013). Perceived satisfaction, perceived usefulness, and interactive learning environments as predictors to self-regulation in e-learning environments. *Computers & Education*, *60*(1), 14-24. https://doi.org/10.1016/j.compedu.2012.07.015

Liguori, E., & Winkler, C. (2020). From offline to online: Challenges and opportunities for entrepreneurship education following the COVID-19 pandemic. *Entrepreneurship Education and Pedagogy*, *3*(4), 346-351.

Liu, M., Kang, J., & Wu, X. (2019). Use of educational technology in higher education: A mixed-methods systematic review. *Journal of Educational Technology & Society*, *22*(2), 1-14.

Manohar, S., Mittal, A., & Marwah, S. (2019). Service innovation, corporate reputation, and word-of-mouth in the banking sector: a test on multigroup-moderated mediation effect. *Benchmarking: An International Journal*, *27*(1), 406-429. https://doi.org/10.1108/bij-05-2019-0217

Mao, V., & Zhang, B. (2020, February 18). *New business opportunities emerging in China under COVID-19 outbreak*. China Briefing. https://www.china-briefing.com/news/china-business-opportunities-covid-19-outbreak/

McGaghie, W. C., Bordage, G., & Shea, J. A. (2001). Problem Statement, Conceptual Framework, and Research Question. *Academic Medicine*, *76*(9), 923-924. https://doi.org/10.1097/00001888-200109000-00021

Mewburn, I., & Thomson, P. (2013). Why do academics blog? An analysis of audiences, purposes, and challenges. *Studies in Higher Education*, *38*(8), 1105-1119. https://doi.org/10.1080/03075079.2013.835624

Min, Y., Huang, J., Varghese, M. M., & Jaruwanakul, T. (2022). Analysis of Factors Affecting Art Major Students' Behavioral Intention of Online Education in Public Universities in Chengdu. *AU-GSB E-JOURNAL*, *15*(2), 150-158. https://doi.org/10.14456/augsbejr.2022.80

Momen, M. A., Sultana, S., & Haque, A. K. M. A. (2019). Web-based marketing communication to develop brand image and brand equity of higher educational institutions: A structural equation modelling approach. *Global Knowledge, Memory and Communication*, *69*(3), 151-169. https://doi.org/10.1108/gkmc-10-2018-0088

Mtebe, J. S., & Raphael, C. (2018). Key factors in learners' satisfaction with the e-learning system at the University of Dar es Salaam, Tanzania. *Australasian Journal of Educational Technology*, *34*(4), 107-122. https://doi.org/10.14742/ajet.2993

Nguyen, N., & LeBlanc, G. (2001). Image and reputation of higher education institutions in students' retention decisions. *International journal of educational management*, *15*(6), 303-311. https://doi.org/10.1108/eum0000000005909

Nitzan, I., & Libai, B. (2011). Social effects on customer retention. *Journal of marketing*, *75*(6), 24-38. https://doi.org/10.1509/jm.10.0209

Oliver, R. L. (1997). *Satisfaction: A Behavioral Perspective on the Consumer* (1st ed.). The McGraw-Hill Companies.

Panda, S., Pandey, S. C., Bennett, A., & Tian, X. (2019). University brand image as competitive advantage: a two-country study. *International Journal of Educational Management*, *33*(2), 234-251. https://doi.org/10.1108/ijem-12-2017-0374

Pedroso, R., Zanetello, L., Guimarães, L., Pettenon, M., Gonçalves, V., Scherer, J., Kessler, F., & Pechansky, F. (2016). Confirmatory factor analysis (CFA) of the Crack Use Relapse Scale (CURS). *Archives of Clinical Psychiatry (São Paulo)*, *43*(3), 37-40. https://doi.org/10.1590/0101-60830000000081

Plano Clark, V. L. (2017). Mixed methods research. *The Journal of Positive Psychology*, *12*(3), 305-306. https://doi.org/10.1080/17439760.2016.1262619

Record Trend. (2022, May 31). *2020 Digital China Development Report from State Network Information Office.* https://recordtrend.com/industry-information/2020-digital-china-development-report-from-state-network-information-office/

Roca, J. C., Chiu, C. M., & Martínez, F. J. (2006). Understanding e-learning continuance intention: An extension of the Technology Acceptance Model. *International Journal of human-computer studies*, *64*(8), 683-696. https://doi.org/10.1016/j.ijhcs.2006.01.003

Rowley, J. (1996). Measuring Quality in Higher Education. *Quality in Higher Education*, *2*(3), 237-255. https://doi.org/10.1080/1353832960020306

Rowley, J. (1996). Motivation and academic staff in higher education. *Quality Assurance in Education*, *4*, 11-16. https://doi10.1108/09684889610125814.

Rughoobur-Seetah, S., & Hosanoo, Z. A. (2021). An evaluation of the impact of confinement on the quality of e-learning in higher education institutions. *Quality Assurance in Education*, *29*(4), 422-444. https://doi.org/10.1108/qae-03-2021-0043

Seok, S. (2008). Teaching aspects of e-learning. *International journal on e-learning*, *7*(4), 725-741.

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. https://doi.org/10.1016/j.jfoodeng.2005.02.010

Sica, C., & Ghisi, M. (2007). The Italian versions of the Beck Anxiety Inventory and the Beck Depression Inventory-II: Psychometric properties and discriminant power. In M.A. Lange (Ed.), *Leading - Edge Psychological Tests and Testing Research* (pp.27-50). Nova

Snoj, B., Korda, A. P., & Mumel, D. (2004). The relationships among perceived quality, perceived risk, and perceived product value. *Journal of Product & Brand Management*, *13*(3), 156-167. https://doi.org/10.1108/10610420410538050

Sultan, P., & Wong, H. Y. (2013). Antecedents and consequences of service quality in a higher education context. *Quality Assurance in Education*, *21*(1), 70-95.

Thomas, E. H., & Galambos, N. (2004). What satisfies students? Mining student-opinion data with regression and decision tree analysis. *Research in Higher Education*, *45*(3), 251-269. https://doi.org/10.1023/b:rihe.0000019589.79439.6e

Vovides, Y., Sanchez-Alonso, S., Mitropoulos, P., Nickmans, G., Dogba, M. J., & Sales, D. (2019). Digital technologies in medical education: A paradigm shift from a teacher disseminating knowledge to a facilitator assisting the development of learning networks. *Medical Teacher*, *41*(10), 1117-1121.

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

Wang, Q., & Chen, L. (2009). Educational podcasting: A feasibility study using iTunes. *Computers & Education*, *52*(1), 315-327. https://doi.org/10.1016/j.compedu.2008.08.013

World Health Organization. (2020, March 12). *Statement on the second meeting of the international health regulations.* https://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-%282005%29-emergency-committee-regarding-theoutbreak-of-novel-coronavirus-%282019-ncov%29

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

Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. *Journal of marketing*, *52*(3), 2-22. https://doi.org/10.2307/1251446