

# Analysis of Factors Influencing College Students' Online Learning Satisfaction

-- A Case Study of University H

Shuanghe Yang

Jiangxi Agricultural University, Nanchang 330045, China

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**Abstract:** The rise of the "Internet + Education" model marks the entry of online learning into a phase of rapid development. The establishment of online learning platforms like MOOC, Coursera, and Udemy has led to the widespread application of blended learning on campuses. As the understanding of education deepens, the mere application of technology is no longer the sole criterion for measuring educational quality. Learner satisfaction, as a "learner-centered" evaluation method, is gradually becoming a key factor in assessing educational quality. Therefore, this study aims to analyze, from the learners' perspective, the various factors affecting their online learning satisfaction and explore how these factors interact to collectively influence the learning experience. By systematically analyzing these internal mechanisms, the study seeks to promote the continuous development and optimization of online learning.

**Keywords:** Online Learning, Learner Satisfaction, College Students, Learner-Centered.

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## 1. Research Status at Home and Abroad

### 1.1. Current Status of Student Satisfaction Research

The Swedish SCSB model is the earliest known customer satisfaction model. It pioneered the concept of customer satisfaction elasticity and attempted to quantitatively study the impact of customer satisfaction on customer loyalty. A review of the literature reveals that the "Customer Satisfaction Model" theory was initially applied in the consumer services field. Later, an increasing number of educational researchers noticed this concept and attempted to introduce it into the field of education, gradually forming a new perspective for learner-centered research [1]. The United States has the highest degree of marketization in higher education, making learner satisfaction surveys an inevitable choice for its development. National student satisfaction surveys in the US take various forms, the most renowned being the National Student Satisfaction Survey conducted by Noel-Levitz. This survey is characterized by its wide scope, large scale, and nationally recognized results [2]. Initiated in 1994, this survey has developed five different versions tailored to various types of institutions of higher education, providing methods and tools for accurately assessing the quality of higher education.

Professor Liu Xila's satisfaction survey initiated in 2001 pioneered the systematic assessment of student satisfaction by higher education institutions in China. Over time, such surveys have evolved into three main types, reflecting different implementation motives and purposes. The first type is initiated by universities based on their own development needs, aimed at coping with intense competition for students and improving management levels. The second type is conducted by universities to meet the requirements of the Ministry of Education's undergraduate teaching level assessment. The third type involves academic surveys initiated by independent researchers, aiming to explore the

influencing factors and mechanisms of student satisfaction in online learning environments [3]; Scholar Wang Chun's research focused on the online learning experience of in-service tuition-free normal students, using the course Case Studies on the Integration of Information Technology and Curriculum as an example. Through questionnaire surveys, it gained an in-depth understanding of this specific group's satisfaction and feedback regarding online courses [4]; Professor Liu Wu conducted empirical research on students' satisfaction with teaching quality and campus services by designing and implementing a self-compiled scale. His findings revealed two core aspects students primarily focus on when evaluating universities [5].

### 1.2. Current Status of Research on Factors Influencing Online Learning Student Satisfaction

Research on factors influencing online learning student satisfaction highlights differences in the focus chosen by Chinese and Western scholars. Western scholars started related research earlier, possess more experience, tend to explore new research angles and introduce new methods during their studies, and their conclusions are often more novel. Research by G.S. ISMURATOV found that teacher attitude, flexibility, course quality, diverse assessment, and learners' computer anxiety are all key factors affecting learner satisfaction [6]. Shengru Li used moderation analysis to further study the mediating role of interactive materials. The research showed that interactive teaching materials significantly impact learning satisfaction and the relationship between intrinsic motivation and learning satisfaction [7]. Kuo and Belland investigated online learners' perceptions of interaction, satisfaction, and self-performance, finding that online self-efficacy was positively correlated with these three types of interaction, but the degree of influence varied [8]. Lane Stephen specifically explored student satisfaction in blended learning models. The study found that emotional engagement is a significant predictor of student satisfaction

in blended learning courses and suggested that instructors adopt measures such as maintaining personal contact with students, using collaborative active learning strategies, and emphasizing the alignment of learning activities with learning objectives to enhance the student experience [9].

Empirical research is the most commonly used method by Chinese scholars. Numerous scholars have used empirical studies to deeply explore influencing factors across various dimensions such as student satisfaction, teacher instruction, and curriculum design, achieving a series of valuable research results.

Professor Liu Wu's research is a paradigm of empirical study. He was the first to incorporate self-development and curriculum design into the satisfaction measurement index system and conducted empirical surveys using a self-compiled questionnaire. His research not only enriched the understanding of student satisfaction but also provided valuable reference for higher education institutions to better understand student needs, optimize the educational environment, and thereby enhance overall educational quality and service levels; Professor Xu Xiaohui's research is also a significant achievement in the field of empirical research. Based on a self-constructed scale, his empirical study found that among the factors significantly influencing college student satisfaction, the university's overall image, the status of professional development, and teacher instruction ranked at the top. His research findings have important practical significance for guiding higher education institutions to improve their overall image, strengthen professional development, and enhance teacher instruction [10]. Li Jiaxin's research focused on college students' satisfaction with MOOC platforms. Based on a survey of six universities in Nanchang, including Nanchang Hangkong University and Jiangxi Normal University, she concluded that perceived quality, perceived value, and continuous usage intention all affect college students' satisfaction with MOOC platforms. Her research findings provide important guidance for optimizing the design and operation of MOOC platforms [11].

## 2. Research Methods

### 2.1. Research Subjects

The survey subjects of this study were undergraduate students currently enrolled at University H, including freshmen, sophomores, juniors, and some seniors still on

campus. This study used an online questionnaire to survey students at the university. The survey started on August 8, 2025, and ended on August 13, 2025, lasting 6 days. A total of 104 high-quality questionnaires were collected. After review, 1 invalid questionnaire was identified, resulting in 103 valid questionnaires, yielding an effective response rate of 99.03%.

### 2.2. Research Tools

The study employed a questionnaire survey method. By referencing existing learner satisfaction questionnaires, the "Questionnaire on Factors Influencing College Students' Online Learning Satisfaction" was compiled. The questionnaire consisted of four sub-questionnaires covering the dimensions of learner expectations, perceived quality, learner satisfaction, and continuous learning intention. Among them, the learner expectations sub-questionnaire used the scale compiled by scholars Chen Li and Dai Xinlai [12]; the continuous learning intention sub-questionnaire used the scale developed by Bhattacharjee and Chao-Min Chiu [13], both demonstrating good reliability.

The questionnaire used a five-point Likert scale. Respondents were asked to choose the option that best fit their situation from "Completely Disagree," "Disagree," "Neutral," "Agree," and "Completely Agree." "Completely Disagree" was assigned 1 point, "Disagree" 2 points, "Neutral" 3 points, "Agree" 4 points, and "Completely Agree" 5 points. Some items were reverse-scored.

## 3. Statistical Methods

Data collection was conducted using the Wenjuanxing platform. Participants were briefed on the requirements before filling out the questionnaire. After collection, valid questionnaires were coded, and data were entered and statistically analyzed using SPSS 27.0.

### 3.1. Reliability Analysis

Reliability refers to consistency and stability, measuring the consistency of results from repeated measurements of the same subject. It is commonly measured using Cronbach's  $\alpha$  coefficient and split-half reliability. This survey used Cronbach's  $\alpha$  coefficient to test the reliability of the questionnaire.

Table 1. Reliability Indicators

| Reliability Indicator        | Learning Expectations | Perceived Quality | Online Learning Satisfaction | Continuous Learning Intention | Total Scale |
|------------------------------|-----------------------|-------------------|------------------------------|-------------------------------|-------------|
| Number of Items              | 3                     | 6                 | 3                            | 3                             | 15          |
| Cronbach's Alpha Coefficient | 0.710                 | 0.907             | 0.801                        | 0.888                         | 0.938       |

Based on the reliability analysis results above, the Cronbach's  $\alpha$  coefficient for the total questionnaire is 0.938, which is above 0.8, indicating ideal questionnaire reliability. The Cronbach's  $\alpha$  coefficient for the learner expectations subscale is 0.710; for the perceived quality subscale, it is 0.907; for the learner satisfaction subscale, it is 0.801; and for the continuous learning intention subscale, it is 0.888. The Cronbach's  $\alpha$  coefficients for the four subscales range from 0.710 to 0.907, reaching or approaching the statistically ideal level, indicating that the reliability of this questionnaire is generally good.

### 3.2. Validity Analysis

This study used the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity to analyze the sample data to confirm its suitability for factor analysis. According to statistical standards, a KMO value greater than 0.80 indicates suitability for factor analysis, and a value greater than 0.90 indicates high suitability.

**Table 2.** KMO and Bartlett's Test

|                                                  |                    |          |
|--------------------------------------------------|--------------------|----------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. |                    | 0.890    |
| Bartlett's Test of Sphericity                    | Approx. Chi-Square | 1129.175 |
|                                                  | df                 | .105     |
|                                                  | Sig.               | .000     |

The exploratory factor analysis results show a KMO value of 0.890. The KMO coefficient ranges from 0 to 1, and values closer to 1 indicate better questionnaire validity.

Based on the significance of the sphericity test, which is infinitely close to 0, the null hypothesis is rejected, indicating

good validity. Through exploratory factor analysis, the items in the scale can be divided into four dimensions (since this study draws on mature scales, factor analysis was not performed again). The above analysis shows that this survey questionnaire has good reliability and validity.

## 4. Results Analysis

### 4.1. Frequency Analysis of Demographic Variables

Based on the 103 valid samples collected, the distribution of demographic variables is as follows:

**Table 3.** Demographic Characteristics of Respondents

| Variable             | Option              | Frequency | Percentage | Mean | Std. Deviation |
|----------------------|---------------------|-----------|------------|------|----------------|
| Gender               | Male                | 44        | 43%        | 1.57 | 0.497          |
|                      | Female              | 59        | 57%        |      |                |
| Grade                | Freshman            | 23        | 22.3%      | 2.61 | 1.105          |
|                      | Sophomore           | 21        | 20.4%      |      |                |
|                      | Junior              | 32        | 31.1%      |      |                |
|                      | Senior              | 27        | 26.2%      |      |                |
| Online Attendance    | 100%                | 46        | 44.6%      | 1.83 | 0.954          |
|                      | 90%-99%             | 38        | 36.8%      |      |                |
|                      | 70%-89%             | 12        | 11.6%      |      |                |
|                      | 50%-69%             | 5         | 4.85%      |      |                |
|                      | Below 50%           | 2         | 1.94%      |      |                |
| Class Activity Level | Very Dissatisfied   | 5         | 4.85%      | 4.07 | 1.105          |
|                      | Dissatisfied        | 2         | 1.94%      |      |                |
|                      | Basically Satisfied | 23        | 22.3%      |      |                |
|                      | Satisfied           | 24        | 23.3%      |      |                |
|                      | Very Satisfied      | 49        | 47.5%      |      |                |

Based on the above analysis results, the distribution of the surveyed subjects is reflected, where the mean represents the central tendency and the standard deviation represents the degree of variation.

The frequency analysis results for each variable show that the distribution basically meets the survey requirements. Among the 103 collected samples, there were 59 females, accounting for 57%, and 44 males, accounting for 43%, indicating a relatively balanced overall gender ratio. In terms of grade distribution, the percentages of freshmen, sophomores, juniors, and seniors were 22.3%, 20.4%, 31.1%, and 26.2%, respectively. Regarding online attendance, students with 100% attendance accounted for the largest proportion at 44.6%, followed by those with 90%-99%

attendance at 36.8%. Those with 70%-89%, 50%-69%, and below 50% attendance accounted for smaller proportions: 11.6%, 4.85%, and 1.94%, respectively. Regarding satisfaction with class activity level, 47.5% were very satisfied, 23.3% were satisfied, 22.3% were basically satisfied, 1.94% were dissatisfied, and 4.85% were very dissatisfied. It is evident that most students are satisfied with the activity level of online learning classes.

### 4.2. Differential Analysis of Online Learning Satisfaction Based on Individual Factors

#### (1) Gender

**Table 4.** Analysis of Differences in Various Dimensions by Gender

| Variable                      | Gender | N  | Mean  | Std. Deviation | t     | P     |
|-------------------------------|--------|----|-------|----------------|-------|-------|
| Online Learning Expectations  | Male   | 44 | 12.52 | 1.649          | 2.354 | 0.021 |
|                               | Female | 59 | 11.68 | 1.907          |       |       |
| Perceived Quality             | Male   | 44 | 26.09 | 3.388          | 2.083 | 0.04  |
|                               | Female | 59 | 24.54 | 3.967          |       |       |
| Learner Satisfaction          | Male   | 44 | 12.8  | 1.96           | 2.367 | 0.02  |
|                               | Female | 59 | 11.81 | 2.169          |       |       |
| Continuous Learning Intention | Male   | 44 | 12.84 | 1.842          | 1.649 | 0.102 |
|                               | Female | 59 | 12.19 | 2.097          |       |       |

According to the independent samples t-test results, significant differences exist between genders in the dimensions of learner expectations, perceived quality, and

online learning satisfaction ( $P < 0.05$ ). The significance level for learning expectations by gender is 0.021, which is less than 0.05, indicating differences between male and female

students. Based on the means, males have slightly higher online learning expectations than females. Similarly, significant differences exist in perceived quality and online learning satisfaction by gender, with male means slightly higher than female means. However, no statistically

significant difference was found in continuous learning intention by gender, as the sig value of 0.102 is greater than the standard 0.05; therefore, the null hypothesis cannot be rejected.

(2) Grade

**Table 5.** Analysis of Differences in Various Dimensions by Grade

| Variable                      | Option    | N  | Mean  | Std. Deviation | F     | P     | Multiple Comparisons |
|-------------------------------|-----------|----|-------|----------------|-------|-------|----------------------|
| Learning Expectations         | Freshman  | 23 | 12.48 | 1.904          | 0.679 | 0.037 | 3<1,2,4              |
|                               | Sophomore | 21 | 11.9  | 1.578          |       |       |                      |
|                               | Junior    | 32 | 11.78 | 1.773          |       |       |                      |
|                               | Senior    | 27 | 12.07 | 2.074          |       |       |                      |
| Perceived Quality             | Freshman  | 23 | 25.87 | 3.684          | 1.031 | 0.382 | /                    |
|                               | Sophomore | 21 | 25.43 | 3.218          |       |       |                      |
|                               | Junior    | 32 | 24.25 | 3.81           |       |       |                      |
|                               | Senior    | 27 | 25.59 | 4.236          |       |       |                      |
| Learner Satisfaction          | Freshman  | 23 | 12.26 | 2.281          | 1.318 | 0.026 | 3<1,2,4              |
|                               | Sophomore | 21 | 12.33 | 1.713          |       |       |                      |
|                               | Junior    | 32 | 11.69 | 2.177          |       |       |                      |
|                               | Senior    | 27 | 12.78 | 2.19           |       |       |                      |
| Continuous Learning Intention | Freshman  | 23 | 12.17 | 2.406          | 0.718 | 0.543 | /                    |
|                               | Sophomore | 21 | 12.48 | 1.721          |       |       |                      |
|                               | Junior    | 32 | 12.28 | 1.818          |       |       |                      |
|                               | Senior    | 27 | 12.93 | 2.093          |       |       |                      |

Note: 1 represents Freshman, 2 represents Sophomore, 3 represents Junior, 4 represents Senior

**Table 6.** Analysis of Differences in Various Dimensions by Attendance Rate

| Variable                      | Option    | N  | Mean  | Std. Deviation | F     | P     | Multiple Comparisons |
|-------------------------------|-----------|----|-------|----------------|-------|-------|----------------------|
| Learning Expectations         | 100%      | 46 | 12.33 | 2.001          | 1.662 | 0.165 | /                    |
|                               | 90%-99%   | 38 | 11.68 | 1.71           |       |       |                      |
|                               | 70%-89%   | 12 | 11.75 | 1.712          |       |       |                      |
|                               | 50%-69%   | 5  | 11.8  | 0.837          |       |       |                      |
|                               | Below 50% | 2  | 14.5  | 0.707          |       |       |                      |
| Perceived Quality             | 100%      | 46 | 26.76 | 3.064          | 4.707 | 0.072 | /                    |
|                               | 90%-99%   | 38 | 23.84 | 4.104          |       |       |                      |
|                               | 70%-89%   | 12 | 23.58 | 3.232          |       |       |                      |
|                               | 50%-69%   | 5  | 24    | 3.937          |       |       |                      |
|                               | Below 50% | 2  | 28    | 2.828          |       |       |                      |
| Learner Satisfaction          | 100%      | 46 | 13    | 2.098          | 3.403 | 0.012 | 1>2,3,4,5            |
|                               | 90%-99%   | 38 | 11.79 | 1.961          |       |       |                      |
|                               | 70%-89%   | 12 | 11    | 1.595          |       |       |                      |
|                               | 50%-69%   | 5  | 11.4  | 2.881          |       |       |                      |
|                               | Below 50% | 2  | 12.5  | 2.121          |       |       |                      |
| Continuous Learning Intention | 100%      | 46 | 13    | 2.098          | 1.786 | 0.138 | /                    |
|                               | 90%-99%   | 38 | 12.18 | 1.69           |       |       |                      |
|                               | 70%-89%   | 12 | 11.75 | 1.765          |       |       |                      |
|                               | 50%-69%   | 5  | 11.4  | 2.881          |       |       |                      |
|                               | Below 50% | 2  | 12.5  | 3.536          |       |       |                      |

Note: 1 represents 100%, 2 represents 90%-99%, 3 represents 70%-89%, 4 represents 50%-69%, 5 represents Below 50%

Based on the one-way ANOVA results above, among the four dimensions, only learning expectations and learner satisfaction show differences by grade, as their significance levels are 0.037 and 0.026, both less than 0.05. According to the multiple comparisons, for these two dimensions, the expectations and satisfaction of freshmen are higher than those of juniors; similarly, the expectations and satisfaction of

sophomores and seniors are also higher than those of juniors. This result suggests that juniors have significantly lower expectations for online learning compared to other grades, which may be related to the curriculum plan arrangement. It is well known that course difficulty increases spirally with grade level. Therefore, junior-year courses are generally more difficult than those in freshman and sophomore years. Since senior year focuses mainly on practical internships and practicums, online courses are mostly general education or elective courses, which are not significantly difficult. Thus, it

can be inferred that the comprehensiveness and difficulty of junior-year courses are relatively high throughout the university stage, leading students to potentially lower their expectations due to the difficulty.

### (3) Attendance Rate

Based on the one-way ANOVA results above, among the four dimensions, only learner satisfaction shows differences by attendance rate, with a significance level of 0.012, which is less than 0.05. According to the multiple comparisons, students with 100% attendance rate have higher satisfaction with online learning than those in other attendance rate categories. Students with attendance rates of 50%-69% and

below 50% show significantly lower satisfaction. The reason may be that students with attendance rates of 50%–69% and below mostly belong to academically challenged students (or students with learning difficulties). Their attendance is low, their learning attitude may not be particularly positive, they are generally inattentive during class, and even when they occasionally pay attention, it is difficult to keep up with the progress, naturally leading to unsatisfactory learning outcomes. Therefore, compared to students with higher attendance rates, their learner satisfaction scores are lower.

### (4) Activity Level

**Table 7.** Analysis of Differences in Various Dimensions by Activity Level

| Variable                      | Option            | N  | Mean  | Std. Deviation | F     | P     | Multiple Comparisons |
|-------------------------------|-------------------|----|-------|----------------|-------|-------|----------------------|
| Learning Expectations         | Very Inactive     | 7  | 13.57 | 1.134          | 3.256 | 0.015 | 2<1,3,4,5            |
|                               | Inactive          | 5  | 13    | 1.581          |       |       |                      |
|                               | Moderately Active | 22 | 11.18 | 1.435          |       |       |                      |
|                               | Active            | 23 | 11.78 | 1.565          |       |       |                      |
|                               | Very Active       | 46 | 12.24 | 2.057          |       |       |                      |
| Perceived Quality             | Very Inactive     | 7  | 27.43 | 2.573          | 7.225 | 0.001 | 2<1,3,4,5            |
|                               | Inactive          | 5  | 26.2  | 4.266          |       |       |                      |
|                               | Moderately Active | 22 | 22.32 | 3.564          |       |       |                      |
|                               | Active            | 23 | 24.26 | 3.805          |       |       |                      |
|                               | Very Active       | 46 | 26.61 | 3.109          |       |       |                      |
| Learner Satisfaction          | Very Inactive     | 7  | 13.14 | 1.574          | 3.921 | 0.005 | 2<1,3,4,5            |
|                               | Inactive          | 5  | 13    | 3.082          |       |       |                      |
|                               | Moderately Active | 22 | 11.05 | 1.838          |       |       |                      |
|                               | Active            | 23 | 11.7  | 1.964          |       |       |                      |
|                               | Very Active       | 46 | 12.85 | 2.054          |       |       |                      |
| Continuous Learning Intention | Very Inactive     | 7  | 13.43 | 1.902          | 2.428 | 0.053 | 2<1,3,4,5            |
|                               | Inactive          | 5  | 13.2  | 2.683          |       |       |                      |
|                               | Moderately Active | 22 | 11.55 | 1.896          |       |       |                      |
|                               | Active            | 23 | 12.13 | 1.914          |       |       |                      |
|                               | Very Active       | 46 | 12.85 | 1.932          |       |       |                      |

Note: 1 represents Very Inactive, 2 represents Inactive, 3 represents Moderately Active, 4 represents Active, 5 represents Very Active

As shown in the table above, activity level shows significant differences in all four dimensions: learner expectations, perceived quality, etc., with significance levels all below 0.05. Students who are inactive in online learning have significantly lower expectations than students at other activity levels. Similarly, students who are inactive in online learning also score significantly lower than those at other activity levels in the three dimensions of perceived quality, learner satisfaction, and continuous learning intention. The reason is similar to above: students inactive in online learning are often academically challenged. They interact infrequently with teachers in class, may not have a particularly positive learning attitude, are generally inattentive during lectures, and find it difficult to keep up even when they occasionally pay attention, leading to unsatisfactory learning outcomes. Therefore, compared to more active students, their learner

satisfaction scores are lower. Students who are very inactive in online learning represent those who have essentially given up. They have no interaction with the teacher in class, frequently skip classes, have a very poor learning attitude, and pay little attention to learning itself. Overall, students inactive in online learning score significantly lower in these four dimensions—learning expectations, perceived quality, learner satisfaction, and continuous learning intention—compared to students at other activity levels.

## 4.3. Correlation Analysis of Learner Satisfaction

Hypothesis 1: Learner expectations have a significant impact on learner satisfaction;

Hypothesis 2: Perceived quality has a significant impact on learner satisfaction;

Hypothesis 3: Continuous learning intention has a significant impact on learner satisfaction.

**Table 8.** Correlation Analysis Between Various Dimensions

| Variable                      | Correlation         | Learner Satisfaction | Learning Expectations | Perceived Quality | Continuous Learning Intention |
|-------------------------------|---------------------|----------------------|-----------------------|-------------------|-------------------------------|
| Learner Satisfaction          | Pearson Correlation | 1                    |                       |                   |                               |
| Learning Expectations         | Pearson Correlation | .545**               | 1                     |                   |                               |
| Perceived Quality             | Pearson Correlation | .759**               | .603**                | 1                 |                               |
| Continuous Learning Intention | Pearson Correlation | .745**               | .557**                | .712**            | 1                             |

\*\* Correlation is significant at the 0.01 level (2-tailed)

To examine the relationships between online learner satisfaction and learning expectations, perceived quality, and continuous learning intention, Pearson product-moment correlation was used for analysis. Based on the correlation results above: between learner satisfaction and learning expectations,  $p < 0.01$ , indicating a significant correlation. The correlation coefficient =  $0.545 > 0$ , thus showing a significant positive correlation. Between learner satisfaction and perceived quality,  $p < 0.01$ , indicating a significant correlation. The correlation coefficient =  $0.759 > 0$ , thus showing a significant positive correlation. Between learner satisfaction and continuous learning intention,  $p < 0.01$ , indicating a significant correlation. The correlation coefficient =  $0.745 > 0$ , thus showing a significant positive correlation. Furthermore, the p-values between all variables are  $< 0.01$ , indicating significant correlations between all variables (significant at the 99% confidence level), and since all correlation coefficients are greater than 0, they are all positive relationships.

#### 4.4. Regression Analysis of Factors Influencing Learner Satisfaction

##### (1) Regression Analysis

**Table 10.** Regression Analysis of Learning Factors on Learner Satisfaction

|                               | Unstandardized Coefficients | Standardized Coefficients Beta |       | t     | P     | Collinearity Statistics |       |
|-------------------------------|-----------------------------|--------------------------------|-------|-------|-------|-------------------------|-------|
| Model                         | B                           | Std. Error                     | Beta  |       |       | Tolerance               | VIF   |
| (Constant)                    | 0.072                       | 0.94                           |       | 0.077 | 0.039 |                         |       |
| Learning Expectations         | 0.067                       | 0.087                          | 0.058 | 0.771 | 0.043 | 0.604                   | 1.656 |
| Perceived Quality             | 0.247                       | 0.05                           | 0.44  | 4.953 | .000  | 0.432                   | 2.317 |
| Continuous Learning Intention | 0.423                       | 0.09                           | 0.399 | 4.671 | .000  | 0.467                   | 2.139 |

Dependent Variable: Total Online Learning Satisfaction

From Table 10, it can be seen that learning expectations have a significant positive impact on learner satisfaction ( $B = 0.067$ ,  $\beta = 0.058$ ,  $P = 0.043 < 0.05$ ); perceived quality has a significant positive impact on learner satisfaction ( $B = 0.247$ ,  $\beta = 0.44$ ,  $P = 0.000 < 0.05$ ); continuous learning intention has a significant positive impact on learner satisfaction ( $B = 0.423$ ,  $\beta = 0.399$ ,  $P = 0.000 < 0.05$ ).

Based on the absolute values of  $\beta$ , perceived quality has the greatest explanatory power for learner satisfaction ( $\beta = 0.44$ ), followed by continuous learning intention ( $\beta = 0.399$ ) and learning expectations ( $\beta = 0.058$ ). Based on the above analysis, the quantitative relationship (regression equation) between learner satisfaction and learning expectations, perceived quality, and continuous learning intention is as follows:

Learner Satisfaction =  $0.072 + \text{Learning Expectations} * 0.067 + \text{Perceived Quality} * 0.247 + \text{Continuous Learning Intention} * 0.423$

##### (2) Regression Model Diagnostics

As shown above, certain correlations exist between the four dimensions. This study used SPSS 27.0 software to describe the causal relationships between variables.

**Table 9.** Correlation Coefficients of the Regression Model

| Model  | R     | R <sup>2</sup> | adjR <sup>2</sup> | F     | Sig.  |
|--------|-------|----------------|-------------------|-------|-------|
| Result | .814a | 0.663          | 0.652             | 64.82 | .000b |

a Predictors: (Constant), Continuous Learning Intention, Learning Expectations, Perceived Quality

b Dependent Variable: Learner Satisfaction

From Table 9: The variance analysis results of the regression model examining the impact of continuous learning intention, learning expectations, and perceived quality on learner satisfaction show:  $F = 64.82$ ,  $P = 0.000 < 0.05$ , indicating that the regression model for factors influencing learner satisfaction is statistically significant; Adjusted  $R^2 = 0.652$ , indicating a good fit. This means the independent variables (continuous learning intention, learning expectations, perceived quality) can explain 65.2% of the variation in the dependent variable (learner satisfaction).

The above analysis only interprets the regression output. Whether this result is accurate, reliable, and credible requires further diagnostics on this regression model:

Diagnostic 1: The linear regression model requires that no multicollinearity exists between the independent variables.

From Table 10, the VIF values for all independent variables are less than 5 ( $VIF = 1.656 < 5$ ;  $VIF = 2.317 < 5$ ;  $VIF = 2.139 < 5$ ), meaning there is no multicollinearity between the variables. Diagnostic 1 passed.

Diagnostic 2: The linear regression model requires that no serial correlation exists between samples.

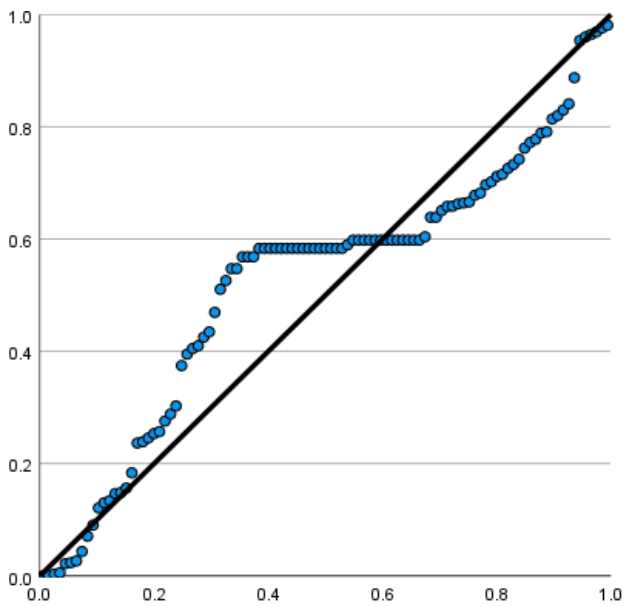
**Table 11.** Regression Model

| Model  | R                 | R <sup>2</sup> | Adjusted R <sup>2</sup> | Std. Error of the Estimate | Durbin-Watson |
|--------|-------------------|----------------|-------------------------|----------------------------|---------------|
| Result | .814 <sup>a</sup> | .663           | .652                    | 1.255                      | 1.829         |

As shown in the table above, the statistic used to examine serial correlation in sample data is the Durbin-Watson (DW) statistic. A DW value near 2 indicates sample independence, meaning no serial relationship exists between the sample data.

DW = 1.829 is near 2. Diagnostic 2 passed.

Diagnostic 3: The linear regression model requires that residuals follow a normal distribution.



**Figure 1.** Normality Test: Normal P-P Plot of Standardized Residuals

As shown in Figure 1, the scatter points on the P-P plot basically fall on or near the diagonal line, indicating that the residuals of this regression model follow a normal distribution. Diagnostic 3 passed.

All diagnostics for the regression model are passed, meaning the conclusion that learning expectations, perceived quality, and continuous learning intention significantly affect learner satisfaction is accurate, stable, and reliable.

Overall survey results indicate: The overall status of online learning satisfaction among students at University H is good, at an upper-middle level. Factors such as learning expectations, perceived quality, and continuous learning intention have a significant impact on their learner satisfaction.

Therefore, based on the analysis of the current state of online learner satisfaction and its influencing factors, strategies and suggestions for improvement are explored from three aspects: educational and teaching quality, correctly understanding the teacher's role, and selecting teaching methods, in order to enhance the overall quality of online learning and increase satisfaction.

## 5. Conclusion

### 5.1. Ensuring Educational and Teaching Quality is Key to Enhancing Learner Satisfaction

Firstly, in the online learning environment, teachers must ensure that the teaching content is both detailed and comprehensive, as this differs from traditional face-to-face teaching. In traditional classrooms, when students encounter difficult knowledge points, they can directly ask the teacher or seek help from classmates, but the format of online learning limits this immediate interaction. Students may not receive timely answers and assistance, leaving questions unresolved. If this situation persists, it will inevitably affect the effectiveness of online teaching, reducing student motivation and satisfaction.

Secondly, to improve the effectiveness of online learning, teachers need to prepare thoroughly before class. Some teachers may not recognize the differences between online and offline teaching and thus do not prepare specifically for the characteristics of online learning, instead using traditional teaching methods and pacing. This can lead to various issues during teaching, such as the inability to write on a blackboard or ask students questions promptly, resulting in chaotic teaching progress and poor outcomes. Students might perceive this as insufficient preparation by the teacher.

Finally, teachers also need to consider students' actual situations when assigning homework. Students commonly report issues such as excessive homework load, high difficulty, insufficient time allotted, and lack of timely feedback on assignments. Due to the reduced control teachers have over students in the online environment, some teachers might assign large amounts of homework to ensure learning outcomes, leading to an excessive academic burden that students struggle to complete. Simultaneously, some teachers may not consider students' realities, assigning tasks that are too difficult or impractical, such as requiring students to complete lab reports at home without the necessary experimental conditions. Such assignments are naturally difficult to complete and fail to achieve the goal of reinforcing new knowledge.

### 5.2. Correctly Understanding the Teacher's Role is the Main Lever for Enhancing Learner Satisfaction

First, in online learning, the teacher's timely response to student questions has dual significance: on one hand, it helps teachers understand students' learning status and mastery level, allowing for timely adjustment of teaching pace and ensuring effectiveness; on the other hand, this interaction strengthens communication between teachers and students, promotes emotional connection, and enhances student satisfaction with online learning. Second, teachers should maintain a serious attitude in all aspects, including lesson preparation, teaching, grading assignments, and answering questions. Students often emulate teacher behavior; therefore, a teacher's conscientious and responsible attitude can significantly stimulate student initiative and motivation. In the online learning environment, where students require strong self-discipline, teachers should set an example through their dedication, guiding students to approach learning tasks correctly. Third, teachers should also care for and care for all students, practice empathy, and always consider issues from the student's perspective. Many teachers, facing the challenges of online learning, sacrifice their rest time to record teaching videos for students, fill in gaps during class time, and answer questions. This dedication and caring attitude not only achieves good teaching results but also wins students' respect and affection.

### 5.3. Choosing Appropriate Teaching Methods is an Inevitable Choice for Enhancing Learner Satisfaction

Form is the carrier of content and directly affects teaching quality. According to student feedback, mainstream teaching methods include live teaching, a combination of live and recorded teaching, and independent learning. Live teaching, as an emerging form, has gradually become the preferred choice for students. It breaks the constraints of time and space,

allowing students to participate in classroom learning anytime, anywhere. Through live platforms, teachers can interact with students in real-time, answering questions promptly. This immediate feedback mechanism greatly enhances the student learning experience. Simultaneously, live teaching often includes recording features, allowing students to review the content repeatedly after class to consolidate their knowledge. This flexibility and convenience make live teaching one of the most popular teaching methods currently.

Besides live teaching, the combination of live and recorded teaching is also widely used. This blended approach combines the interactivity of live sessions with the flexibility of recordings, meeting both the need for real-time interaction in class and allowing students to learn at their own pace afterwards. The emergence of this teaching form makes instruction more diverse and personalized, catering to the different learning needs of students.

Independent learning, as a teaching form that emphasizes student agency, is also widely applied in educational practice. It emphasizes student self-drive and self-management, encouraging students to actively explore and discover knowledge. In the independent learning mode, students can choose learning content based on their own pace and interests. This personalized approach helps cultivate students' independent thinking skills and lifelong learning habits.

When choosing teaching methods, teachers should consider students' learning needs, course content, and teaching objectives to achieve the best teaching outcomes. Meanwhile, educational institutions should provide necessary support and training to help teachers master new teaching technologies and continuously improve teaching quality. With the continuous advancement of educational technology, we have reason to believe that future teaching will be more diverse, better aligned with student learning needs, and cultivate more talents with innovative spirit and practical ability.

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