



Exploring drivers of service quality in higher education: Periods in the pandemic in Mongolia

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This research was made with the purpose to process the feedback on factors of service quality performance level, the satisfaction of students, the influence of students' loyalty and improvement of service quality, and to research higher education service quality evaluation on the position of students. A total of 227 students of state universities are the object of the research. As the result of the research, the hypothesis that during the pandemic the evaluation for the service is different as a class learning experience of the students are not the same is not accepted. Even though many of the SERVPERF measurement items have been used in this study, Tangibles and Assurance were rated low and all five factors in service quality were found to have a positive effect on satisfaction. Student satisfaction and student loyalty are also directly related.

Index Terms— higher education, service quality, student satisfaction, student loyalty.

I. INTRODUCTION

Universities have a "Students as the main customers" approach [1], and education should be understood as a service [2]. Services are intangible, production and consumption are simultaneous, and they are characterized by variability, all of which make quality measurements very complex [3]. Therefore, we used customer satisfaction models from the perspective of service organizations to study the satisfaction of our university students and the loyalty of loyal customers. On the other hand, recent research on higher education in Mongolia lacks research on the relationship between quality and customer satisfaction and behaviour using the SERVQUAL model, a five-dimensional model of service quality and quality in educational institutions.

As of 2021, 147,293 students are studying in 88 higher education institutions in [4]. 52.5% of them are studying in 20 state-owned universities and colleges. It indicates that there is a lot of competition. Tuition fees fund Mongolia's higher education sector, and the operating costs of public universities (public utilities such as electricity and heating) are covered by the state budget [5]. The satisfaction of students at the university influences their decision to study at the university [6], which is an important indicator for advanced retraining and contributes to financial stability. The quality of products and services plays a crucial role in the competitiveness of all organizations. Higher education institutions are focusing on gaining an understanding of service quality through student satisfaction [7]. Quality assessment is assessed externally and internally, and the university divides students into two categories: those that benefit the student and those that benefit

the quality assurance process [8].

Internal quality assurance identified by the capacity and process of the university's self-assessment, improvement, and governing body. Internal quality assurance implemented in two main ways: program evaluation and internal management evaluation. The development of internal quality assurance is an important issue in overseeing the Mongolian higher education curriculum and supporting graduate employment, so universities are establishing internal quality assurance units [5]. The internal quality assurance unit and the academic affairs division at the beginning and end of each term assess student satisfaction. The SERVPERF and HEISQUAL models are the most appropriate for the study, as the courses are educated combined with classrooms and online due to this global epidemic. Therefore, the research aims to study the quality of service performance of university students promptly, to determine the level of quality, to determine the factors of service quality, as well as to identify the impact of service quality, student satisfaction, and student loyalty.

II. THEORETICAL RESEARCH

COVID 19 and Higher education in Mongolia

Due to the new pandemic, the government has been on high alert since February 12, 2020 [9], and by order of the relevant ministries, all levels of education in Mongolia conducted e-learning activities based on their resources on January 27, 2020, online for 16 weeks until the end of the 2019-2020 school year. On November 11, 2020, the first case of domestic COVID-19 infection was registered in Mongolia and we

moved into a quarantine regime [10]. Due to the repetition of this situation several times, the fall semester of the 2020-2021 school year students spent 7 weeks in the classroom and 9 weeks online, while the entire spring semester was electronic. In the fall semester of the 2021-2022 school year, students have a combination of 2 weeks of e-learning and combining 14 weeks of e-learning and classroom study (no more than 25 students per class) [11].

The current 4th year students of the central school, which is the object of the research, studied for a total of 112 weeks, of which 55 weeks are classroom, 43 weeks are online, and 14 weeks combined. The third-year students studied for a total of 80 weeks, of which 23 weeks were a classroom, 43 weeks were online, and 14 weeks combined. Students of the second year had a total of 48 weeks which is 7 weeks of them are classroom, 27 weeks were spent online and 14 weeks are combined. Depending on the years spent on a course of the students, the quality of the service varies [12]. The study year is higher the grade and the more positive the attitude towards the school [7]. Therefore, it is reasonable to divide the surveyed students into two groups: those with more classroom experience and those with less classroom experience to conduct a comparative study.

Measuring Service Quality in Higher Education

As defined in the SERVQUAL model, service quality is the difference between customer expectations and service givers' performance in terms of quality metrics [3]. The model focuses on five key shortcomings that have a decisive impact on customer satisfaction. The SERVQUAL method is a useful method for assessing the educational process, allows for the analysis of the process and its elements, and helps identify strengths and weaknesses [13]. Recent studies have also been conducted using this GAP model [14]; [15]; [16]; [18]. The SERVPERF method has been widely used in research in recent years because of its ease of use [15]; [19]; [17]; [20]. Which reduces the required measurements of the SERVQUAL method by 50 percent, and because it allows for more interpretation of service quality studies with a single measure [21].

Researcher Abdullah considered the SERVQUAL and SERVPERF methods to be general measures of service quality and developed the HEdPERF model, a method of measuring service quality tailored to the specifics of the higher education sector [22]. Researcher Abbas developed the HEISQUAL model, adding student skills and personal development indicators, and argued that the SERVQUAL, SERVPERF, and HedPERF models were action-oriented [23].

In this study, the quality of higher education was assessed in a comprehensive way, not only in terms of process but also in terms of results-oriented factors [23]. Some of the five factors in assessing the service quality were innovated and the study has been conducted by mixed approach from the student's perspective. For example, six factors for evaluating service quality (Non-academic aspects, Academic aspects, Reputation, Access, Program issues, Understanding) were

proposed, and questionnaires were developed for the Reputation and Understanding factors [22]. Seven factors for evaluating service quality (Teachers' profile, Curriculum, Infrastructure and Facilities, Management and Support Staff, Employment Quality, Safety and Security, Students' Skills Development) [23] are proposed and additional questionnaires from Employment Quality, Safety, and Security Measures, Students' Skills Development were developed.

Student Satisfaction

Service assurance should be the most important thing in any educational institution, including customer and product satisfaction [2]. Satisfaction is a subjective concept that expresses the level of personal evaluation and satisfaction of service. In other words, a service that one person is satisfied with may appear unsatisfactory to another [24]. Student satisfaction is the result of an evaluation of their experience with the educational services they receive, and personal factors related to the student can be divided into school factors [25]. Service quality has been identified as a pre-satisfaction factor [12], and the result of integrated service quality models in the higher education sector is student satisfaction. An important measure of higher education success is student satisfaction [22] and a variable that is measured in service quality assessment [26]. Many studies have proven that service quality has an impact on student satisfaction [12]; [1]; [26]. Therefore, this study concluded that student satisfaction was a direct consequence of the service received and that student satisfaction had an impact on future behavior, such as student loyalty [27].

Student Loyalty

Student loyalty affects educational institutions in the short and long term. Loyal students are good promoters who actively influence the quality of education and recommend it to others through their active participation and commitment. There are many benefits, such as word-of-mouth communication, offering a curriculum, or becoming a student again [28]. The most valuable thing is that the number of previous students increases and they return to the university to update their knowledge [25]. Therefore, student loyalty has a significant impact on the financial stability of the university, the quality of education, and alumni feedback, which is the main goal of higher education institutions [6].

Student satisfaction and loyalty are considered to be related to the quality of higher education services [29] that meet a student's expectations, and research has shown that student satisfaction has a significant impact on student loyalty behavior [30]. Therefore, the study found that the level of student satisfaction had a positive effect on student loyalty, and defined a loyal student as a satisfied student. Some studies examine the relationship between satisfaction and behavioral attitudes [31], while the university uses the term student loyalty because there are programs for loyal customers.

III. RESEARCH DESIGN

Hypotheses development and Research Model

The years spent on a course are not only directly related to student satisfaction [12] but also affect test results [2]. Therefore, the following hypotheses were proposed of service quality varies depending on the years spent on a course.

Hypothesis 1. There is a difference in the assessment of the quality of educational services on classroom courses by experienced students and inexperienced students.

An important source of quality in higher education services is information and past experience, while service quality outcomes include a direct impact on satisfaction, credence, and indirect impact on brand performance and behavioral goals [12]. Recent research has shown that quality is a pre-satisfaction factor, and dissatisfied students are more likely to reduce their attendance or drop out of university altogether [6]. The end result of most models that assess the quality of services in the higher education sector is student satisfaction [1]. Thus, the following hypotheses were proposed based on the previous studies.

Hypothesis 2. The quality of educational services has a positive effect on student satisfaction.

Hypothesis 2.1. Tangibles positively affect student satisfaction.

Hypothesis 2.2. Assurance positively affects student satisfaction.

Hypothesis 2.3. Empathy positively affects student satisfaction.

Hypothesis 2.4. Responsiveness positively affects student satisfaction.

Hypothesis 2.5. Reliability positively affects student satisfaction.

Student satisfaction is an important and key driver of student loyalty [6]. Borishade's the study of whether the quality of service affects student loyalty and whether student satisfaction is an intermediate variable between these variables suggests that student satisfaction is a measure of service quality and student satisfaction and proved that it is an intermediate variable of fidelity [32]. However, there are many studies that have shown that student satisfaction has a positive effect on student loyalty [33]; [32]; [30]; [28]; [29]; [6]; [25].

Hypothesis 3. Student satisfaction has a positive effect on student loyalty.

Thus, the research model is proposed based on the theoretical basis and measurement of variables, as shown in Fig 1.

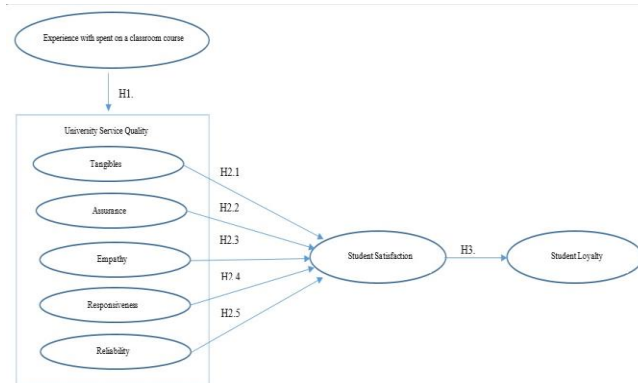


Fig 1. Proposed model

Sampling and Data collection

The sample size that met the objectives of the study was selected from the undergraduate students of the Central University as they are considered valid and the 2nd, 3rd, and 4th-grade groups from the sample population. In addition, the basic assumption of sampling is that the original population is normally distributed, and a simple random sampling method was used to select the sample size. The minimum sample size was chosen with a 95% confidence level and a confidence interval of +/- 5%, so the total sample size was estimated to be 256, as the number of active students in the fall of 2021-2022 academic year was 763. The survey was conducted at random for 40 days from September 20 to October 29, 2021 and 280 questionnaires were distributed in hard copy, and 227 questionnaires were processed. Collecting printed questionnaires has slowed down due to online access in the last 2 weeks. Although 29 questionnaires were invalidated, the figure is 89% of the optimal sample size, which are considered sufficient to represent the original population.

Questionnaire and Measurement tools

The 4 parts of questionnaires consisted of a total of 34 questions, including 3 questions about the general condition of the participants, 25 questions about the University Service Quality, 3 questions about student satisfaction, and 4 questions about student loyalty. The variables were evaluated using Likert's 5-point scoring scale (1 point strongly disagree), 5 points (Strongly agree). The results were processed using IBM SPSS 26 and AMOS 23 software, and Two Independent Samples t- Test, Confirmatory Factor Analysis, and Structural Equation Modelling analysis were performed.

IV. DATA ANALYSIS AND FINDINGS

Two Independent Samples t- Test

70.5 percent of the survey participants were female; 48.0 percent were students of the 4th year. As for their program, 31.3 percent is Accounting, 17.6 percent were Business Law, 13.7 percent were Finance. According to the average rating of 25 questionnaires on the quality of educational services, the highest score was "Teachers' knowledge and skills are good enough" ($m = 4.23$) and the lowest score was "A club or facilities that allow students to develop their interests and

talents" (m = 2.44). The average variables were Assurance m = 3.66, Empathy m = 3.47, Responsiveness m = 3.43, Reliability m = 3.35, and Tangibles m = 3.01.

Depending on the classroom experience, the 2nd and 3rd year students were split into the inexperienced group and the 4th year students were divided into groups with more experience. Although the assessment of the quality of student education services was considered to be different, the results of the analysis were not statistically significant. Therefore, Hypothesis 1 was rejected.

Table I. Result of Two independent sample t-test

	Less experience of a classroom course (N=118)		More experience of a classroom course (N=109)		Difference (Less-More)	t value	p value
	Mean	St dev	Mean	St dev			
Tangibles	3.01	.693	3.00	.651	.014	.153	.878
Assurance	3.65	.650	3.67	.588	-.015	-.184	.854
Empathy	3.44	.624	3.51	.736	-.078	-.865	.388
Responsiveness	3.39	.700	3.44	.638	-.054	-.608	.544
Reliability	3.37	.683	3.32	.754	.050	.522	.602

Confirmatory Factor Analysis

Confirmatory Factor analyses were performed to ensure that the data collected were consistent with the proposed hypothesis model and IBM AMOS was used to perform CFA for the identified constructs. Table II shows the compatibility indices, the values of which are $\chi^2 (265) = 731.017$ (p < .000), GFI = .768, CFI = .830, NFI = .760, RMSEA = .088, and RMR = .061, the result is compatibility with mediocre. The CFA analysis showed that the AVE (Average Variance Extracted) of each parameter was greater than .5, and the CR (Composite Reliability) coefficient of each parameter was greater than .6. Therefore, the survey questionnaire was considered to be appropriate and the following 5 factors of 25 items were considered good reliability and validity. Detailed specifications are shown in Table III.

Table II. CFA results of Goodness-of-Fit Indices (N = 227)

χ^2	df	Absolute fit measures		Incremental fit measures					Parsimonious fit measures		
		RMR	RMSEA	NFI	GFI	CFI	TLI	RFI			
731.017	256	.061	.088	.760	.768	.830	.813	.729			

Table III. CFA results of the overall measurement model (N = 227)

Factors	Items	Estimate	SE	t value	p value	CR	AVE
Reliability	It has facilities and a student activity club that can be used to	1.000				0.823	.579

Dimension	Item	Mean	St dev	Assurance	Empathy	Responsiveness	Reliability
Assurance Dimension	develop students' interests and talents. It has a library where you can find the latest training resources.	1.194	.176	6.793	***	0.850	
	It has good access to computers and the internet.	1.222	.180	6.804	***	0.651	
	It provides state-of-the-art equipment to support the learning process.	1.317	.176	7.483	***	0.792	
	It has clean and comfortable classrooms and other service facilities.	1.018	.147	6.904	***	0.669	
Empathy Dimension	It provides hygiene and safety.	1.000				0.831	
	Curricula help students develop soft skills, such as creative thinking and active participation.	1.164	.127	9.156	***	0.741	
	The curriculum is comprehensive and easy to understand.	1.083	.119	9.131	***	0.734	.534
	The curriculum is in line with the student's future work prospects.	1.106	.120	9.220	***	0.746	
	Teachers' knowledge and skills are good enough.	.724	.099	7.283	***	0.680	
Responsiveness Dimension	There is a friendly relationship between staff and students.	1.000				0.751	
	Management understands and communicates each student's individual needs.	.809	.085	9.533	***	0.633	
	Counselors take good care of students and understand the problems they face.	.697	.091	7.698	***	0.507	.548
	Teachers are fair in their assessment of students.	.637	.075	8.486	***	0.870	
	The teacher's lectures are meaningful and give assignments appropriate to the lesson.	.585	.067	8.711	***	0.874	
Reliability Dimension	All staff are courteous and always ready to help students.	1.000				0.699	
	Teachers are non-discriminatory, one-sided, and have a good communication culture.	.971	.107	9.041	***	0.658	
	The professional department provides counseling time to students.	.830	.116	7.150	***	0.799	.507
	It offers part-time jobs to students.	.759	.117	6.458	***	0.757	
	Instructors provide specific information on workshop assignments, homework, and exams.	.740	.084	8.826	***	0.637	
Reliability Dimension	It has its own Enterprise Resource Planning system.	1.000				0.671	
	It complies with applicable service standards.	1.389	.158	8.806	***	0.806	
	It introduces students to the performance of educational services.	1.465	.171	8.577	***	0.766	.560
	It focuses on prompt handling of service-related complaints.	1.520	.182	8.371	***	0.738	
	Proper service is provided as promised.	1.612	.179	8.998	***	0.835	

Structural Modelling Analysis

SEM analysis was performed to validate the proposed model. The fit of the tested proposed model was measured by examining several goodness-of-fit indices. The compatibility indices were shown in Table IV. The values are $\chi^2(418) = 971.306$ ($p < .000$), $GFI = .757$, $CFI = .849$, $NFI = .764$, $RMSEA = .077$, $RMR = .057$ and compatibility with mediocre. Therefore, the proposed theoretical model is consistent with the observed data and is statistically significant. (Fig 2.) Therefore, the results indicate that hypotheses 2 and 3 are supported. Tables V and VI show the results of the hypothesis testing and the AMOS.

Table IV. SEM results of Goodness-of-Fit Indices (N = 227)

χ^2	df	Absolute fit measures		Incremental fit measures		Parsimonious fit measures		
		RMR	RMSEA	NFI	GFI	CFI	TLI	RFI
971.306	418	.057	.077	.764	.757	.849	.832	.738

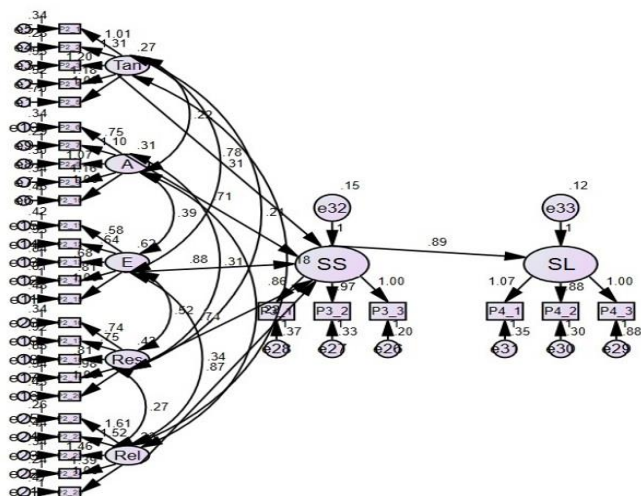


Fig 2. Research Model with path coefficients

Table V. Results of the proposed model

Hypothesized path	Standardized coefficients	t value	p value
Tangibles → Student Satisfaction	.784	2.607	***
Assurance → Student Satisfaction	.707	3.005	***
Empathy → Student Satisfaction	.880	2.121	***
Responsiveness → Student Satisfaction	.740	4.187	***
Reliability → Student Satisfaction	.871	5.280	***
Student Satisfaction → Student Loyalty	.891	9.161	***

*** $p < 0.001$

Table VI. Results of the Hypothesis

Hypothesis	Results
H1: There is a difference in the assessment of the quality of educational services on classroom courses by experienced students and inexperienced students.	Rejected
H2: The quality of educational services has a positive effect on student satisfaction.	Confirmed
H3: Student satisfaction has a positive effect on student loyalty.	Confirmed

V. DISCUSSION

This study was being conducted with 227 students who are studying for Bachelor's Degree. Using SERVPERF and HEISQUAL models, a study measured the relationship between the quality of higher education services and student satisfaction and student loyalty. In the analysis, several important findings were being identified.

1. Out of five quality assessment factors, Tangibles is the lowest indicator, and out of a total of 25 questions, facilities and student activity clubs and centers that can be used to develop students' interests and talents were identified. This resulted in the same results as other low-value studies [18]. Therefore, care should be taken to intensify extracurricular activities, especially non-classroom activities. In assessing the quality of e-learning, Udo's research will need to reconsider the reality, as the SERVQUAL model changes the "Tangibles" factor to "Web content" [31].

2. The hypothesis that students with more classroom experience and inexperienced students have different assessments of the quality of educational services has been rejected. This did not coincide with the results of a survey that focused on quality assessment and participation in quality assurance for new entrants, as students gain more quality as they progress or gain experience and have a positive attitude toward their school [7]. Further research should be conducted at the beginning and end of the course, at the entrance and exit, to compare and contrast other demographic variables.

3. In the survey, the questionnaire was developed in a mixed form, but measured by 5 key indicators of the SERVQUAL model [32]; [29]. Researcher Araújo's study analyzed which of the five factors was more important, and found that Assurance had the highest score [17]. In the study, Empathy had the highest score in terms of service quality and satisfaction, while Assurance had the lowest score. Therefore, it is time to analyze the comprehensiveness and ease of understanding of the school's curriculum, its relevance to students' future work prospects, and how it helps students develop soft skills such as creative thinking and active participation.

4. Empathy was highest, with friendly relations between university management, staff, faculty, and students. In addition, the main responsibility of higher education institutions is to ensure that teachers are well prepared, effective, and fair in their assessment of students.

The hypothesis that student satisfaction has a positive effect on student loyalty has been confirmed and is consistent with the results of many studies [33]; [32]; [30]; [28]; [29]; [6]; [25]. Therefore, we believe that the addition of programs, activities, and discounts for loyal customers will be the basis for sustainable growth.

VI. CONCLUSION

The purpose of this study was to identify the variables in the quality of higher education services, whether the student's study year experience differs from each quality variable, and the impact between the quality of higher education services, student satisfaction, and student loyalty. In the last two years, due to the pandemic, Mongolia has been subjected to multiple quarantines, classroom failures, and unprepared online classes. Therefore, while the study period experience is considered to be a control variable, the survey found that the student study period experience is no different in the quality assessment. It has also been proven that all variables that measure the quality of higher education services have a positive effect on satisfaction. Student satisfaction and loyalty were also directly related.

VII. LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The survey was being conducted from a student's perspective of view and was a limiting factor because it was conducted on paper and online using a simple sampling method. Therefore, there should be a system for fully listening to and resolving student feedback, so further qualitative research should be conducted using Focus Group Interviewing. Stakeholder engagement is critical to the quality of service, and further research needs to be conducted from the perspective of internal consumers, employers, governments, parents, and the community [22]. There is also a need for how student complaints are handled [33] and more studies about leadership [34].

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