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Assessing the Quality of Post-COVID Online Teaching for Higher Education Students in Pakistan

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Abstract

From the global scholastic perspective, the most formidable challenge of Coronavirus (COVID-19) has been the closure of educational institutions and the shift to online learning platforms. Even in developing countries like Pakistan, where face-to-face teaching was generally the norm, an emergency move had to be made to online teaching in mid-March 2020. Considering that students are the most relevant stakeholders in this regard, the current study's researchers employed a quantitative strategy to gauge the standpoints of Pakistani higher education students regarding the quality of online teaching. For the analysis, Wilcoxon W test was used as a non-parametric statistical technique on a sample of 167 higher education students obtained through Non-Probability Purposive and Convenience Sampling. The instrument used for gathering the data was a "ServQual" instrument for measuring the service quality of online teaching. Responsiveness and web content are significant for below expectations at a 5 percent significance level.

Keywords: Expectations, Higher education, Online teaching, Pandemic, SERVQUAL

INTRODUCTION

Starting in China as an epidemic in December 2019, Covid-19 quickly spread across the globe. On March 11th 2020, the director of the World Health Organization declared the coronavirus disease to have acquired the status of a pandemic (World Health Organization, 2020). In Pakistan, the first two cases infected with the virus were confirmed on February 26th, 2020 (Ali, 2020), leading to a rapid spread of the disease in all four provinces. Besides aggressively affecting the health sector, Covid-19 has wedged the entire world brutally into different spheres, the most affected of these being the economic, social, and educational sectors due to the lockdown restrictions and social distancing standard operational procedures (Nicola et al., 2020).

With the rapid pandemic spread, the educational establishments closed down in all affected countries. Higher education institutions mainly had to take emergency measures to facilitate and continue the unhindered dissemination of learning via online platforms. Online education is managed via the internet and has different classifications, contingent on the aspects and degree of online learning assimilated into courses. Online platforms such as Zoom, Google Meet, Skype and other available forums are generally used for learning via the internet. In the wake of the pandemic, the transition to online learning platforms affected students, faculty, and administrators equally. In the early transition stages, this was described as "emergency online education" (Marinoni et al., 2020, p. 6) and for the first time, it became mandatory for students internationally to study all their courses online (Zimmerman, 2020).

Statement of the Problem

In developed countries, online education has been progressively emerging along with face-to-face classroom interaction. In 2016, 6.3 million students were enrolled in at least one online course in the United States (Zimmerman, 2020). However, in developing countries like Pakistan, except for one virtual university, online learning was either not introduced or conducted sparingly before the pandemic (Khan et al., 2020). After the closure of Pakistani educational institutions in the second week of March 2020 due to the COVID-19 pandemic, there was an urgent shift and higher education faculty moved to online forums to facilitate learning. The initial stages of this shift posed several hurdles for faculty and students, including power failures and poor or no internet connections, which are common features in major Pakistani cities and more so in remote rural areas. Moreover, students complained of teachers being unprepared to teach online and their lack of understanding of what was being taught (Mailizar, et al., 2020). Interestingly, though very familiar with online gaming and other technological skills, young Pakistani adults found it difficult to adjust to online learning.

Among the mandatory requirements set forth by the Higher Education Commission of Pakistan for online teaching, the two most relevant factors pertained to the availability of a Learning Management System (LMS) and trained faculty for online teaching; yet, many faculty members in the higher educational institutions taught online courses for the first time. The issue thus, is to investigate whether the quality of Post-COVID online teaching remains the same as per expectations. Although teams of technology experts were available on campus, it was impossible to cater to all faculty inexperienced in virtual teaching, and several faculty members found the transition very challenging (Hodges et al., 2020). Without fail, it is evident that the students bear the impact of teaching. One of the significant factors contributing to students learning outcomes is hugely dependent on the quality of teaching they encounter. Students' voices need to be heard and heeded in this context. Faculty and management must comprehend their challenges in this sudden transition to online

learning systems.

Purpose of the Study

Since students are significant stakeholders in online learning, examining their perspectives regarding the transition to full-time online forums is very relevant. Analyzing their standpoint will contribute not only to an understanding of their perspectives, but will also highlight if the transition has been a constructive one for students. Thus, both students' positive and negative experiences, the problems they have encountered, and their issues need to be studied to make relevant adjustments and changes in the current online learning system. Moreover, with global technological advancement, not only is online learning relevant during the pandemic, but time is not far when the internet and its related applications will become the norm for learning. Online learning is no longer a temporary solution in crises because renowned universities such as Harvard, Yale, Cambridge, and Oxford, to name just a few, are transitioning from a face-to-face setting to online teaching, and the day is not far when most universities will be adopting technology for remote teaching (Bao, 2020). Student satisfaction is the most crucial variable for the success of online education and it is imperative to understand their standpoint in this respect. Based on the findings, this research study recommends how university management and faculty may tackle the issues proactively.

Scope of the Study

This study considers the quality of online teaching or e-learning in higher educational institutes in Pakistan. These institutes include colleges, learning centers, and universities offering degree-level programs after high school. Out of all the institutions, the study will extend to those engaged in online teaching for a substantial and continuous period of at least two months. The service quality of their learning procedures will be gauged quantitatively through reliability, responsiveness, assurance, and empathy of the teachers conducting classes and the online content made available to the students.

Research Question

Does a significant difference exist between the expectations and experiences of higher education students relating to reliability, responsiveness, assurance, empathy and content of online education service quality?

Hypotheses

- H1: There is a significant difference between the average expected and actual scores of reliability
- H2: There is a significant difference between the average expected and actual scores of responsiveness
- H3: There is a significant difference between the average expected and actual scores of assurance
- H4: There is a significant difference between the average expected and actual scores of empathy
- H5: there is a significant difference between the average expected and actual scores of web content

LITERATURE REVIEW

Since the study examines higher education students' attitudes regarding online learning during the COVID-19 pandemic and their perceptions regarding the beneficial aspects and the challenges in this regard, the literature review focuses on defining online learning and its components to explore the advantages and disadvantages of the system. Furthermore, the review highlights the global impact of Covid 19 on higher education and how different countries, including Pakistan have responded to the challenge.

Online Learning

Online education has progressively grasped the attention of educational researchers for more than two decades and a variety of meanings have been attached to the term by many scholars (Singh & Thuman, 2019). In 1995, the web-based system, Web Course Tools (WebCT), was introduced and considered the first Learning Management System (LMS). This software artifact allows for online course administration by educational institutions and supports uploading course content, discussion forums, assignments, quizzes, and facilitating student learning opportunities. This system was later transformed into Blackboard, which has emerged as the leading e-learning software corporation despite several other e-learning tools (Bates, 2014). This is so because Blackboard Academic Suite affords an expedient and practical interface with students for online learning and interaction between students and faculty (Bradford et al., 2007).

However, due to rapid technological development, there is a lack of clarity regarding online learning and varied terms are denoted to define online learning. The proximity of education technology with education has generated terms such as 'online learning', 'Web-based learning', 'cyber learning', and 'e-learning', which are

used interchangeably (Means et al., 2014; Singh & Thuman, 2019). Means et al. (2014) provide the definition of online learning as the concept of "A learner's interaction with content and people via the Internet for learning" (p.6). According to these authors, distance learning is a broader conception because it comprises learning, wherein the instructor and learner are not face-to-face. Online learning for these authors is a subset of distance learning. The remarkable variety and array of online learning make it difficult to summarize or condense the definition of the term (Horn & Staker, 2011).

Globally, online learning has become a key element in education and offers numerous prototypes and classifications; each model containing its definition, unique pedagogical structures, and theories. This vast area of digital learning includes, amongst other platforms, MOOCs (Massive Open Online Courses) accessible to all and delivered for free (Bowden, 2020), blended or combined learning, web-based learning, synchronous (occurring at the same time) and asynchronous classes (information not restricted by place or time), and mobile learning (Barber, 2017; Hodges et al., 2020) to name a few.

Difference between Online Learning and Emergency Online Learning

If online learning is well planned and organized, its outcome is significant and productive instead of a switch to online learning in times of emergencies or calamities (Alexander, 2020). However, no matter how hasty, extraordinary, or overwhelming the transition to online teaching was, the institutions responded promptly to the emergency (Hodges et al., 2020; Zimmerman, 2020). Besides the types of online learning described above, many online education researchers use an explicit term 'emergency remote teaching' to describe virtual teaching under current circumstances. The term establishes a sharp difference between the current emergency online education and the quality of online education delivered by some institutions before COVID-19 (Hodges et al., 2020). Quality online education comprises focused instruction preparation based on a model that influences the quality of online learning (Branch & Dousay, 2015). However, technology and its models alone do not contribute to students' achievements because a lot depends on the application, educational setup, and aspects of learners interrelating with technology (Means et al., 2014).

The Impact of Covid-19 on Higher Education

Due to the coronavirus pandemic, schools, colleges, and university administrators were bereft of all possibilities and choices except making the most of remote learning via internet resources (Demuyakor, 2020). UNESCO reported on 1st April 2020 that due to the closure of educational institutions, including HEIs, in 185 countries, 89.4% of learners were affected (UNESCO, 2020). The International Association of Universities propelled a Global Survey on the effect of COVID-19 on higher education, including regions of Africa, the Americas, Asia Pacific, and Europe. A total number of 424 survey responses were analyzed from 109 countries. Among the responses, 20 % were those of faculty, 17% responses were received from heads of institutions, and 16% respondents comprised heads of international offices (Marinoni et al., 2020).

Despite 91% of universities reporting that set-ups were in place for online communication with students, there were enormous challenges regarding technological issues, lack of online pedagogical expertise, and fulfilling the demands of various subjects in online teaching. Private HEIs also conveyed that the universities would have to incur financial losses. However, 60% of the institutions involved in the survey also indicated that the increase in virtual learning forums had provided the opportunity for online collaborative learning (Marinoni et al., 2020). Online Collaborative learning pivots around the internet as the leading resource for acquiring knowledge through nurturing online fellowship, thus redesigning education. Evaluation is very close to students' hearts and they look forward to the grades achieved. However, many universities internationally awarded a pass/fail to students who studied course/courses during the spring semester. Evidently, this grading system affected their cumulative GPA and simultaneously limited postgraduate offices to evaluate students' performance with precision (Persky et al., 2020).

Considering the international academic post COVID- 19 scenario in China, the Ministry of Education gave directives for conducting online teaching. By early February 2020, the users of online reached a massive 400 million (Qi, 2020). The HEIs had to face numerous problems, such as setting up online courses, particularly in remote areas, assuring not only resources for online teaching are available, but also ensuring the quality of teaching and most importantly coping with the bottleneck congestion of networks (Tiejun, 2020). Conducting a case study at Peking University, Bao (2020) found that 60% of students prefer spending in-class time for study than out of the class study. Moreover, students lack positive learning attitudes toward online learning because they were not provided with proper learning resources.

Thus based on students' feedback from social media and observations of online teaching at Peking University, (Bao, 2020) recommended practical strategies for avoiding the issues and promoting healthy

online learning commitment. Bao (2020) also underscores “the use of voice in teaching” (p.114) as students are unable to see the body language or facial expressions. Teaching assistants should be hired for faculty who are inexperienced in online pedagogy and some homework and readings should be set so that students remain involved in their studies.

Perspectives of Pakistani Students Regarding the Shift to Online Learning

A descriptive cross-sectional study conducted by Abbasi et al. (2020), in which 382 from a College of MBBS and BDS participated, demonstrated that overall 77.4% of students had adverse standpoints regarding e-learning. Moreover, 86% of students expressed the view that e-learning hardly contributed to their learning and most of them expressed the desire to return to a face-to-face teaching and learning set. One of the significant limitations students referred to concerning the absence of experiential learning they were exposed to in the clinical setting. Thus, it is evident that Pakistani students in the higher education milieu are neither very responsive towards nor prepared for online learning. Similar findings have emerged from studies conducted with students from countries such as China, Malaysia, and Singapore regarding their perceptions of e-learning (Ali, 2020).

Another study was conducted at two Pakistani University Colleges of Medicine and Dentistry by Mukhtar et al. (2020) to explore the perspectives of students and faculty regarding the emergency shift to online education. The study being a qualitative one had fewer participants: 12 faculty members and 12 students. The positive aspect of the findings showed that students felt that they had become more independent in their learning during the COVID-19 lockdown. Moreover, they were also happy with the prospect of learning asynchronously at a time that suited them best. Teachers also thought that online teaching had stimulated a student-centered approach. However, the negative hindsight of the same research (Mukhtar et al., 2020) from the teachers’ perspective reflects that they could only impart theoretical knowledge instead of a combination of theory and clinical work. Faculty also had the grievance that students misbehaved during online sessions and used several online resources during assessments. The students’ responses indicated that their focus in an online class was limited both in the capacity of time and comprehension.

The recommendations offered by teachers and students in the study by Mukhtar et al., (2020) included professional faculty training for online preparedness and case study discussions, rather than theoretical teaching so that the students have more room for discussion. Both faculty and students strongly recommended purchasing sophisticated software and including procedures for detecting plagiarism. Adnan and Anwar (2020) conducted a study to examine the attitude of Pakistani higher education students toward online learning during the pandemic. The 126 students surveyed had completed either the spring semester, partly attended online learning, or students currently attending online courses. Data were obtained through an online survey. As many as 51.6% of students’ responses indicated huge internet accessibility problems, and 11.1% reported that internet services were very costly. A meager 10.3% opined that online learning is motivating, whereas a majority of 71.4% thought it was not motivating. On the positive side, 71.4% of students responded that they were comfortable and well versed in using technology. However, 11.1% of students reported not being comfortable using technology for learning. Moreover, 50.8% of students strongly felt insufficient time in a single online semester to complete an entire course. Only 18.1% said an entire course could be completed during an online semester. A majority of 78.1% of students iterated that face-to-face learning is much more effective than online classes.

ServQual as a Measure of Online Teaching Service Quality

The ServQual instrument was developed more than 30 years ago by Parasuraman, Zeithami and Berry (1988) after five years of study. The developers of the instrument claimed it to be the most reliable and valid instrument for assessing quality in the service sector and able to be used in varied fields such as hospitals, hotels, tourism, information technology, which can be modified according to the context of the researcher’s study area. The final version of the instrument went through several modifications and was later reduced from ten to five dimensions of service quality, namely reliability, assurance, tangibility, assurance, and empathy.

Theoretical Integration

The measurement of the quality of online learning from the perspective of students can be linked to the Cognitive Theory of Multimedia Learning (CTML) by Mayer (1997), which states that people learn more deeply from words and pictures than from words alone and emphasizes that learning takes place best when both the means of visual and auditory channels are taken into account. This promotes lesser stress on cognitive pressure. The ideal way of carrying out such learning is through pictures, graphics, animations, and sound effects integration, all of which come in handy with online platforms and websites.

Another theory that can be linked to this study is the Information Systems Continuance Model (ISCM), which states that when a user makes use of an information technology based program, the readiness and level of usage in the beginning are not the same as towards continuation (Bhattacharjee, 2001). This theory examines users' intentions to continue using the program. The program or information system is successful if usage intentions are strong.

Conceptual Framework

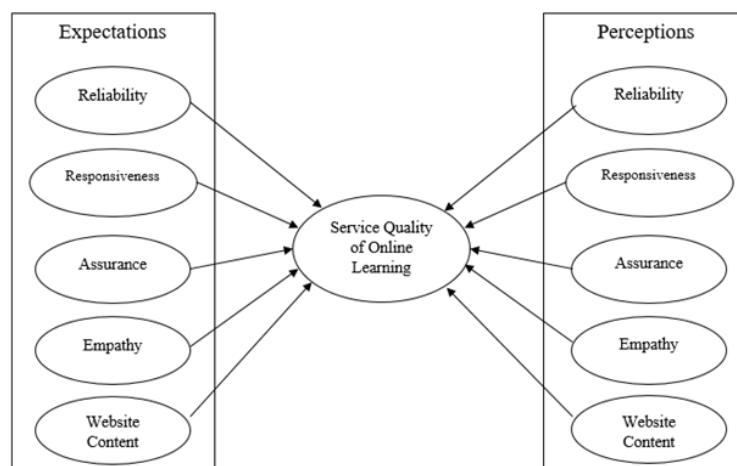


Figure 1. Source: SERVQUAL instrument by Parasuraman, Zeithami & Berry (1988)

RESEARCH METHODOLOGY

Data and Variables

Primary data were collected from various higher education students studying in degree-level programs in Pakistan. The respondents were approached online via formal procedures (University/Institute's administration or academic department) and informal procedures (social media communities and groups of students). These institutes include colleges, institutes, and universities offering undergraduate, graduate, and postgraduate degree programs. Service quality of online learning is used as a formative construct, comprising five dimensions (variables) that cause the construct: reliability, responsiveness, assurance, empathy, and website content.

Data Collection Instrument

The instrument used to collect the data is a structured questionnaire adapted from the original ServQual instrument developed by Parasuraman, Zeithami, and Berry, (1988) and the American study on e-learning quality by Udo et al., (2011). The questionnaire was in two parts: expectations and experience (perceptions of experience by students), and each part had 22 items divided under the five dimensions of service quality. Each item was placed on a Likert scale ranging from 1 to 7. The unique number of items for each dimension was:

- Reliability: 3 items
- Responsiveness: 3 items
- Assurance: 4 items
- Empathy: 4 items
- Website Content: 8 items

The original ServQual dimension of tangibles, which relates to physical facilities and appearance, was replaced with website content to reflect the online learning environment and serve the study's purpose (Udo et al., 2011).

Sample and Sampling Technique

The number of responses collected for the study was at least 384. The sample size was calculated using Yamane (1973)'s formula with a 95% confidence interval and a 5% margin of error. The sampling technique used was a mix of non-probability purposive and convenience sampling, where the researcher's judgment choose elements to participate in the study. Out of the fulfilling participants, the ones easily approachable were selected. The students, a minimum of 18 years of age and from institutions providing online learning for a minimum of two months, were included in the study.

Statistical Technique

To analyze the stand-alone significance of SERVQUAL dimensions, the questionnaire was assessed for reliability, followed by descriptive, and later for normality. The data consisted of a small sample (less than 200), and the test for normality showed a non-normal distribution. Therefore a non-parametric Wilcoxon W test was applied for the pair sample comparison, that is, between the actual and expected quality of post-covid education.

RESULTS AND DISCUSSION

Table 1
Demographic Profile

| Demographic | | Respondents | Per cent |
|-------------|----------------|-------------|----------|
| Gender | Male | 92 | 58.6% |
| | Female | 65 | 41.4% |
| Age | 20-25 years | 76 | 48.4% |
| | 26-30 years | 47 | 29.9% |
| | 31-35 years | 15 | 9.6% |
| | Above 35 years | 19 | 12.1% |
| Education | Undergraduate | 15 | 9.6% |
| | Graduate | 77 | 49% |
| | Postgraduate | 65 | 41.4% |
| Discipline | Business | 119 | 75.8% |
| | Engineering | 13 | 8.3% |
| | Medicine | 5 | 3.2% |
| | Humanities | 8 | 5.1% |
| | Education | 12 | 7.6% |

Male respondents were (58.6%) and females (41.4%). Among the four age groups, the youngsters who fell between 20 and 25 were the highest (48.4%), followed by the next age group (29.9%). As far as education and their electives are concerned; graduates (49%) with business electives (75.8%) were the major respondents to the survey.

Table 2
Reliability Analysis

| Construct | No. of Items | Cronbach's Alpha | |
|-----------------|--------------|------------------|--------|
| | | Expected | Actual |
| Reliability | 3 | 0.727 | 0.832 |
| Responsiveness | 3 | 0.880 | 0.908 |
| Assurance | 4 | 0.930 | 0.941 |
| Empathy | 4 | 0.931 | 0.946 |
| Website Content | 8 | 0.951 | 0.967 |

The survey consisted of two parts: the service quality of post-pandemic online education, what students were getting, and what it ought to be. All dimensions had at least three items and the reliability statistics were greater than 0.7, which confirms the inter-item consistency of the survey instrument.

Table 3
Descriptive Statistics

| | | Mean | Std. Deviation | Skewness | Kurtosis |
|-----------------|----------|--------|----------------|----------|----------|
| Reliability | Expected | 5.0807 | 1.15741 | -.383 | .012 |
| | Actual | 5.0892 | 1.22439 | -.645 | .607 |
| Responsiveness | Expected | 5.3737 | 1.36153 | -.665 | -.288 |
| | Actual | 5.1720 | 1.33259 | -.632 | -.003 |
| Assurance | Expected | 5.5876 | 1.28192 | -.899 | .033 |
| | Actual | 5.5096 | 1.31036 | -.926 | .637 |
| Empathy | Expected | 5.1290 | 1.40928 | -.487 | -.481 |
| | Actual | 5.0064 | 1.36284 | -.631 | -.109 |
| Website Content | Expected | 5.2205 | 1.19437 | -.464 | -.120 |
| | Actual | 5.0048 | 1.26187 | -.665 | .418 |

Data were obtained using a 7-point Likert scale questionnaire. All the average values are greater than four which depicts the higher side of the agreement. The variation in the data set is lesser than the average values. The skewness and excess kurtosis coefficients are non-zero, describing a non-normal data distribution.

Table 4
Normality Test

| | Kolmogorov-Smirnov | | | Shapiro-Wilk | | |
|-------------------------|--------------------|-----|------|--------------|-----|------|
| | Statistic | df | Sig. | Statistic | df | Sig. |
| Reliability Expected | .086 | 157 | .007 | .972 | 157 | .003 |
| Responsiveness Expected | .129 | 157 | .000 | .921 | 157 | .000 |
| Assurance Expected | .148 | 157 | .000 | .899 | 157 | .000 |
| Empathy Expected | .097 | 157 | .001 | .949 | 157 | .000 |
| Web Content Expected | .068 | 157 | .072 | .965 | 157 | .001 |
| Reliability Actual | .114 | 157 | .000 | .955 | 157 | .000 |
| Responsiveness Actual | .124 | 157 | .000 | .946 | 157 | .000 |
| Assurance Actual | .128 | 157 | .000 | .914 | 157 | .000 |
| Empathy Actual | .113 | 157 | .000 | .954 | 157 | .000 |
| Web Content Actual | .089 | 157 | .004 | .959 | 157 | .000 |

Since the number of respondents for the survey questionnaire is 167, which is lesser than 200 and considered a small number of observations; therefore, the test for normality was applied, which rejects the normality hypotheses (sig < 0.01) across the constructs. This suggests applying a non-parametric statistics test for further analysis.

Table 5
Wilcoxon Test

| | Reliability | Responsiveness | Assurance | Empathy | Web Content |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| | <i>Actual - Ex-pected</i> | <i>Actual - Ex-pected</i> | <i>Actual - Ex-pected</i> | <i>Actual - Ex-pected</i> | <i>Actual - Ex-pected</i> |
| Z | -.130 | -2.476 | -1.408 | -1.651 | -2.065 |
| Asymp. Sig. (2-tailed) | .897 | .013 | .159 | .099 | .039 |

The data set does not follow a normal distribution per the normality test statistics. To compare paired samples, the Wilcoxon W test (counterpart of paired sample t-test for parametric statistics) was applied, which suggests that two constructs, that is, responsiveness and web content, were statistically significant. In both cases, respondents had higher expectations than what they were delivered.

CONCLUSION AND RECOMMENDATIONS

This study attempts to gauge the quality of higher education in the post-Covid era. The study consists of the education quality that students observed against the education quality that the students expected. Two quality dimensions, responsiveness and web content were found significantly below expectations, whereas the remaining three dimensions, that is, reliability, assurance, and empathy, were found at par.

Improving the web content and providing a formal learning management system (LMS) with enhanced tailored options is recommended. Moreover, real-time alerts need to be built into the LMS to minimize the lead time in responding to queries.

COMPETING INTERESTS

The authors have declared that no competing interests exist.

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