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Online Education and Managing Service Quality with the Challenges of COVID 19: The Case of University of Business and Technology (UBT) Saudi Arabia

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Abstract: With the pandemic of COVID 19 hitting global economy and forcing social distance, all sectors were exposed to the wave. The educational sector is not exceptional, most universities were forced to adopt online education with the lack of experience necessary needed. This step was like walking blind in a foggy road without realizing the suitability of this service or how to satisfy students. The pandemic spread of Novel Corona Virus (COVID-19) has created stress, anxiety, and several concerns among people around the world. It is disrupting every aspect of human life including education. Since customer satisfaction has always been linked to customer retention, there is a need to measure how students perceive the quality of online learning services. In this study, the perceived quality of online learning at the University of Business and Technology (UBT) was measured, and the modified service performance model (modified SERVPERF) was applied as an instrument for measuring service quality. This study has brought ideas that could be very important for educational institutions in general and managers in UBT specifically. It could help creating more focused marketing plans by giving the priority in investing to sides that promote students' perception of the quality of online learning services in UBT. Management of educational institutions can better customize their marketing efforts to guarantee customers' expectations are satisfied by identifying students' views of service quality. Importance Performance Analysis (IPA) has accurately specified and prioritized the areas that need more care from UBT management to improve online learning experience.

Keywords: Online Education, Service Quality, Service Performance Model, COVID19

1 Introduction

Since the beginning of the COVID-19 pandemic, most countries have turned from face-to-face education to distance education. [1] argued that distance education was implemented, and this way of education is against Arab culture and their intimacy to social closeness. They state (p.1) "Arabs' appreciation of such practices as handshaking, cheek–cheek kissing, nose–nose kissing, friendly hand-holding, sociable hugging, family events, fraternal visits, social feasts, and other aspects of societal closeness. Notwithstanding this value, the virus has managed to almost defeat Arab culture overnight effortlessly, emptying streets, squares, parks, beaches, etc. mosques and even holy mosques. National celebrations (viz. Eids) and funerals have, moreover, become performed from a distance, whereby wishes and condolences are shared via technology". We are living in a technological revolution that is fundamentally alter the way we are doing things and communicate with one another. In today complex and turbulent environment trying to find correct path and the right track is difficult

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for different institutions. The fourth industrial revolution is not an extension from its predecessor, but it is different in terms of its strength, wideness, and impact. The educational system is not isolated from fourth industrial evolution technologies which are predicted to have a significant effect on learning opportunities, educational policies, and modes of delivering the teaching process. The changes start from schools and universities when they design a suitable program and curricula that matching with the new environment and in addition different aspects forming the learning experience. Alakrash and Razak [2] argued that in Malaysia, as well in different countries in the world, educational institutions were closed in response to COVID-19, requiring the adoption of remote learning. If used effectively, such remote learning models can have great potential and benefits. Even before COVID-19, Malaysia's Ministry of Education recognized the need for changes in response to impact of fourth industrial revolution on education, including adapting to new learning environments and utilizing new technologies. Such changes have posed challenges for educational institutions. These challenges include limited and inefficient educational resources, outdated teaching styles, inadequate infrastructure, and a lack of close linkages among educational institutions. They state (p.952) "It is suggested that Education 4.0 will affect the cognitive, affective, and psychomotor domains of learning. Students will need to be competent in digital applications and will thus require appropriate training. Human–machine convergence under 4IR may bridge the disciplinary divides between social sciences, humanities, science, and technology; this can include the specific convergence of disciplines such as computer science, business administration, and mechanical engineering. Universities thus need to collaborate with industry to create new disciplinary programs. Big data, mobile computing, social networks, and clouds allow for self-learning environments, independent of time and place. Students can therefore design their own education pathways according to their personal goals. These new learning approaches require developing skills in areas such as mobile/virtual learning, MOOCs, remote/virtual labs, and gamification"[2] Eleyyan [3] uses World Economic Forum 2018 report to argue that 65% of the students in school today will work in jobs that do not currently exist and 47% of today's jobs will be automated in the next decade. Also, until 2020 more than 50% of the content in a graduate degree will be useless in 5 years. These data excite experts and educators to research more and more to suggest methods and strategies that ensure quantitative and qualitative learning that helps the students to face the future. It is estimated that by 2025, 85 million jobs may be displaced by a shift in the division of labor between humans and machines. It will be evident that any routine and repetitive job that can easily be defined by an algorithm or any other automated process would make relying on humans less attractive. It is estimated that 97 million new roles may emerge. According to Rengin [4] the virus has severe impact on students and "the Asian Development Bank estimated that Asia's students have lost approximately one-third of a year's worth of learning, which in turn could cause students to lose an average of $180 per year in future annual earnings". The impact on enhancing soft skills and communication may be difficult to measure and students are facing great challenges. These challenges created in the new environment calls for a need to measure the level of service quality provided in educational institutions from the student's point of view (student's perceived quality) because customer's (in this case the students) perception of service quality is the main cause of customer retention, which is important to financial stability of educational institutions depending on self-finance.

2 Literature Review

The movement to online learning is not new and does not associate with COVID19. Instead, it has a wide and rapid move with it. The level of success between educational institutions and speed to change differs a lot. For example, Zhejiang University in China managed to get more than 5,000 courses online just two weeks into the transition using "Ding Talk ZJU" platform [5]. While according to UNICEF report (2020), on 26th of August 2020 at least a third of the world's schoolchildren around 463 million children globally were unable to access remote learning when COVID-19 wave hits the globe. The highest percentage of students were in East and Southern Africa while the lowest percentage were in Latin America and the Caribbean. The problem is deepened among poor and students in rural areas in which 75% of students who cannot be reached by remote learning opportunities come from those areas. Measuring quality of service is an important tool to maintain operational efficiency and enhance the overall performance of different institutions. It is considered an important factor for the success of service providers because improving the level of service quality leads to an improvement in customer satisfaction. Working to gain customer satisfaction leads to customer retention. Dhwan [6] pointed to challenges facing online learning, despite its flexibility and ability to attract different audiences without the limitation of time and presence, which are related to learners, educators, and content issues. There is a lack of standards for quality, quality control, development of e-resources, and e-content delivery. These problems need to be tackled immediately to grasp the benefits of online learning. Muthuprasad et al., [7] focused on agricultural student's perception and preference towards online learning through a survey of 307 students. They also explored students' preferences for various attributes of online classes, which will be helpful to design an effective online learning environment. The results indicated that most of the respondents (70%) are

ready to opt for online classes to manage the curriculum during pandemic. Most students preferred to use smart phones for online learning. Using content analysis, they found that students prefer recorded classes with quizzes at the end of each class to improve the effectiveness of learning. Students opined that flexibility and convenience of online classes makes it an attractive option, whereas broadband connectivity issues in rural areas is a problem. Hashim and Mahmood [8] argued that higher educational institutions can use service quality measurement tools to attract students to enroll in their programs. The students' choice of an educational institution is based on many factors, one of them is awareness of the quality of the service provided. Educational institutions need to make sure that their services meet the students' expectations through understanding weakness points and working on improving them. They conducted a questionnaire with a response rate of 36 percent from both private and public universities in Malaysia. The results revealed that commitment to service quality among public universities academic staff at the Malaysian universities were higher than private universities although both are fully concerned about service quality. This study rings alarm for the need to enhance service quality as a critical issue. Hurtado et al., [9] argued that the pandemic represented an opportunity for the development of effective learning solutions. Technology provides solutions at times of crisis to face disruption and helps people to communicate and even work virtually without the need for face-to-face interaction. Students' perceptions of e-learning are a crucial indicator of the quality of the learning experience. They use a structural equations model. The data were obtained from a sample of 467 students attending a university in southern Spain. The results reveal five priority attributes of online teaching, (interaction, level of student concentration, system for reviewing online tests, usefulness of the system, and diversity of assessment tests), that need to be improved to enhance the service quality of the virtual instruction provided to students. Universities need to redefine their online format and different participants in the learning process should collaborate. In another territory which is Netherlands, Schijns [10] analyzed Dutch foundation 'Studiekeuze123' survey on service quality regarding education at higher educational institutions. The factors that considered significant are Professors/Lecturers by distance are the most important satisfaction drivers among students, followed by academic guidance and counselling, testing and assessment and study load.

3 Methodology

To assess online learning service quality in UBT, a questionnaire that consists of 22 item statements represents the items related to the five dimensions of service quality in the SERVPERF model was made. For each item, the student (the customer) was asked to express their feelings about the importance of each item in their decisions regarding online learning and the quality they perceive about the service provided by UBT. Three general opinion questions about future interest behavior, overall quality, and satisfaction were added to the end of questionnaire. The item statements used to measure the performance and importance of online service quality in UBT can be seen in Table 1. To use the modified SERVPERF method (weighted SERVPERF), the importance of each item statement is collected from the questionnaire to do importance performance analysis (IPA). Service quality (SQ) is calculated by multiplying the weights by the perception score as shown in Equation (1):

$$SQ_i = \Sigma_{j=1}^{k} W_{ij} \cdot P_{ij} \tag{1}$$

Where: SQ_i=the service quality of individual "i".
P_{ij}=the perception score of item statement "j" to an individual "i".
W_{ij}=the weighting factor of item statement "j" to an individual "i".
The weighting factors is the normalized importance score calculated from Equation (2):

$$W_{ij} = \frac{I_{ij} - Min}{Max - Min} \tag{2}$$

Where: I_{ij}=the importance of item statement "j" to an individual "i" taken from the questionnaire.
Min and Max are the minimum and the maximum importance scores of item statement "j" respectively.

The 22 item statements in Table 1 were then utilized to compare the importance and performance of the relevant UBT online learning services. It is a two-dimensional graph in which the vertical axis represents the importance of the chosen feature, and the horizontal axis represents how successfully UBT delivers the service. The two-dimensional graph is categorized into four quadrants. The first quadrant, "concentrate here", in the north-west corner, has the statements that should be the management's priority due to their high importance, but poor performance scores. The second quadrant, "keep up the good work", indicates that the importance and performance were high, and that the management should retain this. The third one was placed in the quadrant named "low priority", which is in the south-west corner, since they were rated down in both importance and performance. The last quadrant is "possibly overkill" as there are unnecessary features that the management must adjust due to their low importance but high-performance score.

4 Discussion

The questionnaire was printed and distributed to random samples of undergraduate and graduate students in UBT in both campuses in Dahban and Jeddah in fall 2021. The valid responses were 181. They were collected from

Table 1: Dimensions and item statements of SERVPERF

Dimensions	Item Statement
Tangibility (4 items)	Q1: The university has up-to-date tools for online learning. Q2: The tools used for online learning are visually appealing. Q3: Faculty members appear well dressed and neat in online lectures. Q4: Online learning tools seem compatible with the type of service provided.
Reliability (5 items)	Q5: When a university promises something by a certain time, it delivers it. Q6: Problems are dealt with in a sympathetic and reassuring way. Q7: The online learning services are dependable. Q8: Service are delivered by the promised time. Q9: Accurate record keeping of students' activities.
Responsiveness (4 items)	Q10: Telling the students exactly when the services will be delivered. Q11: Receiving quick services. Q12: Faculty and staff are always helpful. Q13: Faculty and employees have time to respond to students' request promptly.
Assurance (4 items)	Q14: Faculty members and employees are trustworthy. Q15: You feel safe when performing transactions with the university. Q16: Faculty and staff are polite. Q17: Good support from the university allows faculty members and staff to accomplish their job well.
Empathy (5 items)	Q18: The university gives individual attention to the student. Q19: Personal attention from faculty and staff. Q20: Faculty members and staff are aware of your needs. Q21: The university has your best interests in mind. Q22: Suitable operating hours for online learning services.
General Measurements	Future interest behavior: In the next year, my willingness to use online learning in UBT will be: Overall quality: The quality of UBT online learning services is: Satisfaction: My feelings towards UBT online learning services can best be described as:

Table 2: Reliability Analysis

Dimension	Cronbach's Alpha for Importance	Cronbach's Alpha for Performance
Tangibility	0.718	0.714
Reliability	0.792	0.969
Responsiveness	0.774	0.724
Assurance	0.790	0.779
Empathy	0.789	0.771
All questions	**0.926**	**0.908**

students who had studied online courses in UBT in all colleges. The reliability test was used to see if the students' responses to any of the item statements were related to their responses to the others. Using SPSS statistics 26.0, the Cronbach's alpha for each dimension was calculated Table 2. The fact that all the dimensions have values greater than 0.7 indicates that the questionnaire is reliable. The average values for each item statement are then calculated across all respondents. Table 2 summarizes the findings for each item statement and section: importance and perception. Equation 1 is used to calculate the service quality performance and Equation 2 is used to calculate the weighting components. For the five dimensions, the questions with the highest score are Q1 of tangibility, Q5 of reliability, Q12 of responsiveness, Q16 of assurance, and Q22 of empathy. Responsiveness has the largest average importance score of 4.262, and this shows that students expect more in responsiveness. Alternatively, the questions with the lowest score of importance for the five dimensions are Q3 of tangibility, Q6 of reliability, Q10 of responsiveness, Q14 of assurance, and Q19 of empathy. Tangibility has the lowest average importance score of 3.865, and this shows that the students did not seek tangibility. It is evident that Q3 has the lowest score of importance, and this means that students do not seek faculty members that appear well dressed and neat in online lectures. In the perception section, the questions with the highest score of perception for each dimension are Q4 of tangibility, Q9 of reliability, Q12 of responsiveness, Q15 of assurance, and both Q18 and Q22 of empathy. Assurance has the largest average perception score of 3.927, and this shows that students perceive good levels of trustworthiness, safety, politeness, and support from UBT and staff. Alternatively, the questions with the lowest score of perception for each dimension are Q2 of tangibility, Q6 of reliability, Q11 of responsiveness, Q14 of assurance, and Q20 of empathy. Responsiveness has the lowest average perception score of 3.642, and this shows that students need more responsiveness. It is evident that Q11 has one of the lowest scores of perceptions, and this means that the students seek quicker service. The two-dimensional graph was then plotted using the average score of service quality (SQ_j) for each item statement. The horizontal axis indicates how well UBT is perceived to be conducting its

Table 3: Questionnaire Results

Dimensions	Questions	I_j	W_j	P_j	SQ_j
Tangibility	Q1	4.094	0.773	3.834	2.983
	Q2	3.895	0.724	3.696	2.721
	Q3	3.525	0.631	3.641	2.360
	Q4	3.945	0.736	3.845	2.902
	Q5	4.204	0.801	3.856	3.164
Reliability	Q6	4.006	0.751	3.608	2.728
	Q7	4.144	0.786	3.785	3.041
	Q8	4.188	0.797	3.773	3.057
	Q9	4.110	0.778	3.890	3.095
	Q10	4.182	0.727	3.669	2.720
Responsiveness	Q11	4.249	0.812	3.525	2.887
	Q12	4.414	0.805	3.818	3.153
	Q13	4.204	0.801	3.558	2.907
	Q14	4.105	0.702	3.768	2.729
Assurance	Q15	4.227	0.807	4.039	3.333
	Q16	4.309	0.770	4.022	3.219
	Q17	4.304	0.768	3.878	3.063
	Q18	4.177	0.794	3.591	2.884
Empathy	Q19	3.878	0.720	3.492	2.555
	Q20	4.044	0.761	3.381	2.619
	Q21	4.160	0.720	3.547	2.580
	Q22	4.215	0.738	3.591	2.694
	Average	4.117	0.759	3.718	2.881

online learning services, while the vertical axis indicates the importance of the activity to the students.

The two-dimensional graph was then plotted using the average score of service quality (SQ_j) for each item statement. The horizontal axis indicates how well UBT is perceived to be conducting its online learning services, while the vertical axis indicates the importance of the activity to the students. The item statements in the first quadrant named "concentrate here" have low performance but are highly important to the students. As a result, these features should receive the most attention to increase student satisfaction. It is thought to provide the greatest impact for the least amount of investment. Q11, Q13, and Q18 are the items that exist in this quadrant. Q11 and Q13 belong to responsiveness, and they measure the students' perception of receiving quick service and prompt response from staff and faculty members while Q18 belongs to empathy and measures students' perception of the individual attention they get from UBT. It is recommended to develop the attributes that are related to those questions to boost students' satisfaction. In the second quadrant, several item statements are included: Q1, Q5, Q7, Q8, Q9, Q12, Q15, and Q16, which indicate that the attributes are important and that the students are satisfied with the performance of the management. It indicates that UBT has up-to-date tools for online learning; when UBT promises something by a certain time, it delivers it; online learning services in UBT are dependable; UBT delivers service by the time promised; UBT has accurate record keeping of students' activities; UBT faculty members and staff are helpful; students feel safe when performing transactions with the university; and UBT faculty and staff are polite. Most statements in this quadrant relate to the reliability dimension, indicating that UBT can deliver reliable service quickly and accurately. This means that the management should maintain these qualities to retain customers. The low priority quadrant identifies features that are working satisfactorily but are perceived as less important by students as compared to other UBT online learning services attributes. The components Q2, Q3, Q6, Q10, Q19, Q20, Q21, and Q22 make up this quadrant. Although the results indicated that both empathy and a portion of the tangibility items were not regarded as crucial, this does not suggest that the management should abandon efforts to improve service. Employees that can preserve their empathy for students could be rewarded by management. Students who are delighted with the quality of the features are more likely to distribute positive word-of-mouth advertising. Students regard the items in the "possible overkill" quadrant to be less important and excessive, thus they must be minimized owing to the excessive investment. If these characteristics are applied to other areas, better outcomes are expected. Table 4 shows the average scores for each service quality dimension. The values are plotted in figure 4, which reveals that the average importance is high for all dimensions, especially responsiveness and assurance, average performance is low for responsiveness and tangibility, and average service quality is low for empathy.

Table 4: Average scores for online learning services quality in UBT

Dimensions	Average SQ	Average Importance	Average Performance
Tangibility	2.742	3.865	3.754
Reliability	3.017	4.130	3.782
Responsiveness	2.917	4.262	3.642
Assurance	3.086	4.236	3.927
Empathy	2.666	4.095	3.520

Table 5: Future interest, overall quality, and satisfaction

Rating	Future Interest	Overall Quality	Satisfaction
Very Low	8.94%	3.37%	3.35%
Low	5.59%	5.06%	6.70%
Neutral	16.76%	23.60%	21.23%
High	24.58%	33.15%	32.40%
Very High	44.13%	34.83%	36.31%

Three questions were included at the end of the questionnaire to measure future interest, overall quality, and satisfaction for online learning services. The results are shown in Table 5.

Figure 3 shows the plot of the data in table 5 and reveals that there is a trend toward "very high" regarding future interest, overall quality, and satisfaction.

Figure 4 is the Inter-item Correlation Matrix taken from the software IBM SPSS V26 to show the

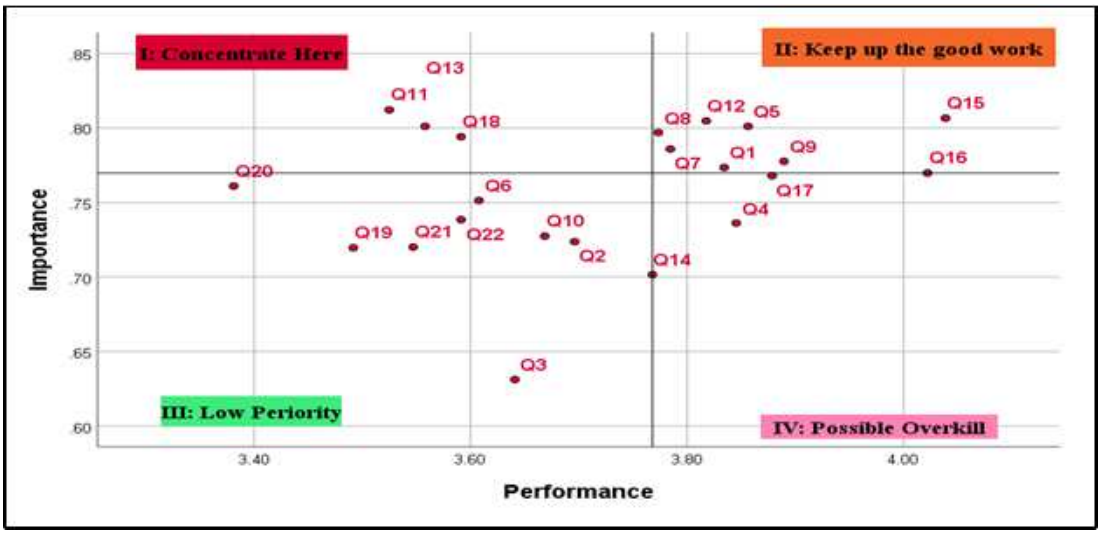

Fig. 1: Importance-Performance Analysis IPA Graph for UBT Online Learning Services

Fig. 2: Average scores for online learning services quality in UBT

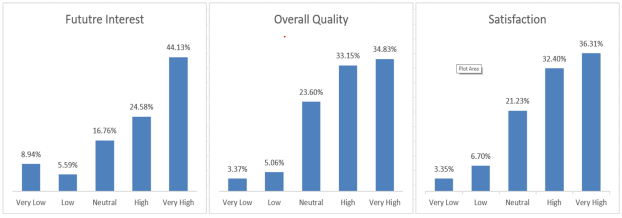

Fig. 3: Average scores for online learning services quality in UBT

significance of correlation between the three general questions and the performance of each item statement of the 22 item statements.

5 Conclusion

This study uses weighted SERVPERF to assess service quality. The perceived quality of online learning at the University of Business and Technology (UBT) was measured, and the modified service performance model

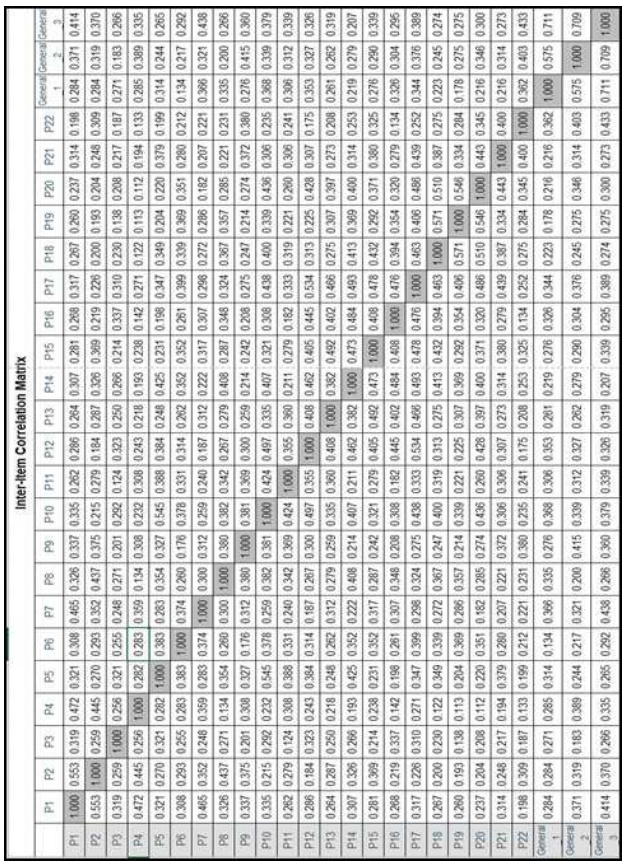

Fig. 4: Inter-item Correlation Matrix taken from software IBM SPSS V26

(modified SERVPERF) was applied as an instrument for measuring service quality. The importance and perception aspects of the model have been found to provide an easy and economical approach of assessing service quality. The findings showed that assessing service quality promises a lot of potential benefits for UBT management. The management can better customize their marketing efforts to guarantee customers' expectations are satisfied by identifying students' views of service quality for a specific service. This involves identifying, prioritizing, and improving areas of service inadequacy and allocating valuable resources where needed. Furthermore, promotional messaging can be fine-tuned to ensure that clients have realistic expectations of the services provided. Built on the whole performance scores, it was determined that UBT needs to put in more effort to improve online learning service quality.

All areas of service quality, such as efficiency, politeness, friendliness, and assurance, should be retained and assessed on a regular basis to see if any improvements are needed. Furthermore, the management should guarantee that all employees are encouraged to participate in the development of quality standards and understand that sustaining service quality is an important part of the employees' responsibilities. It is highly recommended that UBT implements a way to measure online learning services and other services on regular basis under the supervision of faculties to ensure that students express their genuine feelings in the questionnaires. This will provide UBT with a better understanding of what students are interested in, expect, and perceive regarding UBT's services.

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