

# INTEGRATING TQM IMPLEMENTATION IN ASSESSING ONLINE TEACHING AND LEARNING DELIVERY

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## Abstract

Due to pandemic Covid-19, the introducing of online teaching and learning delivery would be effect to the student satisfaction and loyalty. The stakeholder demands the application of online learning would be same apply like learning by face-to-face. The aim of the research is to establish a TQM implementation model to compute the quality of online teaching and learning delivery in satisfaction and loyalty of students and to determine a relationship between TQM implementation with student satisfaction and student loyalty on online teaching and learning delivery. For this research, a sample 199 of final year project students from UniKL MITEC has been taken to answer the questionnaire survey. Statistical measures like descriptive analysis, correlation and regression analysis were used by using IBM SPSS Statistics 20. The findings figure out that the commitment of management, campus facilities and customer feedback improvement variables is more acceptable for students. Meanwhile, course delivery and courtesy were less acceptable as students' view of point. A positive relationship between TQM implementation with student satisfaction and student loyalty of online teaching and learning delivery had been determined. A relationship between student satisfaction and student loyalty has also been established with positive relationship. The TQM implementation model had been created in this study that can be effectively implemented in the others education institutions to increase the education's quality, student satisfaction and student loyalty. After the findings, it is highly recommended that several TQM variables should be revise back in order to improve the student's satisfactory level and loyalty in the future.

Keywords: Total Quality Management; student satisfaction; student loyalty; online teaching and learning

## 1.0 INTRODUCTION

Implementation of online teaching and learning are quite new in Malaysia. This method of learning had been applied during the pandemic Covid-19. Online learning is applying to deliver quality education in consistent through an important online learning tool for pandemic's need of learning especially one that allows both students and faculty members to access important partnerships to keep growing online needs [1]. Therefore, the educational institutes need an adaptable services and solutions for their universities to meet their growing needs by using the suitable online platform, provide the e-learning resources, giving the information, give the exposure to the lecturer on online teaching and conduct the feedback from students [1,2].

However, the introduction of the same requirements or specifications for online teaching and learning needed as same apply in face-to-face learning and give a good impact to the institute and students itself.

In educational institute, teaching and learning processes, university infrastructure, family and peer influences and student finances may be able to influence good student performance. Good performance of students is related to the student satisfaction that give good impression about the university. To assess online teaching and learning delivery, this research was conducted by implementing TQM variables.

TQM is a continuous effort on the part of the management as well as employees of a specific company to ensure customer loyalty and customer

satisfaction where TQM also a theory of management with a collection of quality improvement components [3]. Many organizations around the world have designed TQM as a management system and spread it widely and smoothly to other organizations and many industries including educational institution [4]. Thus, TQM known as the management process with all basic functions such as planning, organizing, leading and controlling that have basic and important factors to achieve and maintain a high-quality level and excellence in educational institute [4].

TQM is customer focused and concentrates on the key to satisfying customers because TQM proves that higher education institutions can do good management and make customers satisfied with the services provided [4]. The lack of satisfaction and loyalty among students to education services would affect the efficiency and activities of education institutes. That's why, this research is important to measure the TQM implementation variables level towards online teaching and learning delivery and able to predict the student satisfaction and student loyalty.

By referring the previous study [5,6], there are five quality variables defined which is C1 - Commitment of Management, C2 - Course Delivery, C3 - Campus Facilities, C4 - Courtesy and C5 - Customer Feedback and Improvement and the researcher established a framework model to show a link TQM variable with student satisfaction and student loyalty. It also shows the link between student satisfaction of online teaching and learning delivery and student loyalty (figure 1).

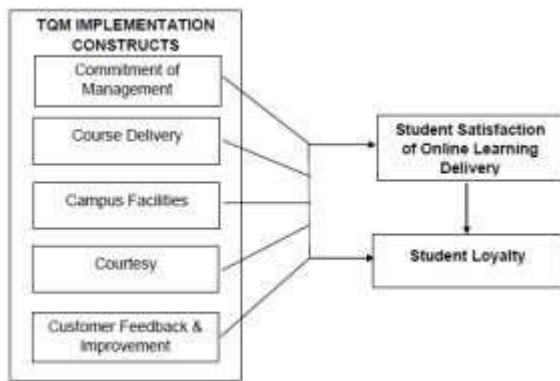


Figure 1 5C TQM framework of online teaching and learning

## 2.0 RESEARCH METHODOLOGY

For this study, the researcher chooses a quantitative method to analyze the TQM variables toward student satisfaction on online learning and student loyalty for final year students. For the starting, descriptive statistics were used to analyze demographics data to measure each of variable's level. Then, inferential statistics be used to find out the relationship of each TQM variable on student

satisfaction and student loyalty. These descriptive and inferential statistics were performed by IBM SPSS Statistics 20 software.

**Research Instrument.** This quantitative research whereby survey questionnaire is the most suitable tools for the data collection. There will be four main parts in the questionnaire. The indicator to construct the questions in the questionnaire is adapted, redesigned and slightly modified from previous research based on the theory that is suitable with this research.

For section A, it will be a simple demographic information such as program name, semester, gender, race, age and CGPA. For section B, TQM variables consist of 30 items, section C, student satisfaction consist of 7 items and section D, student loyalty consist of 9 items were based on previous research by author research questionnaire [7,8,9,10,11,12,13,14]. This study uses Likert scale from 1-5 to indicate respondent's agreement level for part B, C and D. Scale 5 will represent "strongly agree" and scale 1 is represent "strongly disagree" (table 1).

Table 1 Survey Questionnaire Structure

| Part            | Section and Sources  | Details  | Total Questions |
|-----------------|----------------------|--|-----------------|
| A               | Demographic          | Program Name, Semester, Gender, Race, Age, CGPA  | 6               |
| B               | TQM Variables        | Commitment of Top Management, Course Delivery, Campus Facilities, Courtesy and Customer Feedback and Improvement | 30              |
| C               | Student Satisfaction | Overall Satisfaction   | 7               |
| D               | Student Loyalty      | Retention, Recommendation  | 9               |
| Total Questions |                      |  | 52              |

**Questionnaire Scope.** The questionnaire survey was conducted among final year student, as they would have more experience with the university system and considered as best person to answer the questionnaire. UniKL MITEC which located in Masai, Johor were the place of sample be taken-up for this study. The total population of students UniKL MITEC is 1,537 and the population of final year students comprised of 409 students who enrolled in 2020. From the population, sample of 196 students were selected according to Krejci

and Morgan. As a result, there are 199 students that already answers the questionnaire and the data was be analyzed using IBM SPSS Statistics 20.

**Pilot Test.** In this study, reliability of the questionnaire is conducted by using pilot test. Pilot test has been conducted based on 32 respondents. The Cronbach's Alpha (CA) for all construct is exceed 0.7 as per specified by [15] that it is acceptable. CA for TQM variables which is Commitment of Management (0.921), Course Delivery (0.816), Campus Facilities (0.909), Courtesy (0.868) and Customer Feedback and Improvement (0.904). This is followed by Student Satisfaction (0.943) and Student Loyalty (0.896).

**Normality Test.** The normality test had been conducted as to ensure the data are not too far from normal. Normality test result shows that the skewness is between - 2 and +2 and kurtosis is between -7 and +7 as per suggested by [16,17].

### 3.0 RESULTS AND DISCUSSION

After all the questions pass the accepted score of Cronbach's Alpha, the questionnaires have been distributed to 199 respondents based on the Krejci and Morgan sample size. The researcher will discuss and interpret the results by using IBM SPSS Statistics 20 to accomplished the main objectives of this research.

**Descriptive Analysis.** Descriptive statistics is used for summarizing occurrence or measures of central propensity. In addition, brief one quantity summarize a given data set that can be either a representation of the entire population or a sample of it. The level of TQM variables in the model of the study had been measured to achieve the objective of study by using descriptive analysis. The range of five-point Likert-scales were categorized into three equal sized which is low, moderate and high. Therefore, scores of equal or less than 2.33 [4/3 + lowest value (1)] is considered as low; scores higher than 3.67 [highest value (5) – 4/3] is considered high and those in between 2.34 to 3.66, is considered as moderate.

Table 2 Mean and Level of the TQM Implementation Variables towards online teaching and learning delivery

| Construct                         | Mean        | Level       |
|-----------------------------------|-------------|-------------|
| Commitment of Management          | 3.86        | High        |
| Course Delivery                   | 3.37        | Moderate    |
| Campus Facilities                 | 4.00        | High        |
| Courtesy                          | 3.65        | Moderate    |
| Customer Feedback Improvement     | 3.80        | High        |
| <b>Overall TQM Implementation</b> | <b>3.74</b> | <b>High</b> |

Table 2 shows the analysis of the level of TQM implementation variables. Based on this table,

respondents had high level of TQM implementation with the mean value of 3.74. This indicates that the TQM implementation by university was accepted by students with a high level of implementation. Students had high level of TQM implementation toward campus facilities, commitment of management and customer feedback improvement variables which had 4.00, 3.86 and 3.80 mean value respectively while course delivery and courtesy had moderate level of TQM implementation with mean value of 3.65 and 3.37 respectively. That shows the commitment of management, campus facilities and customer feedback improvement variables is more acceptable for students. Meanwhile, course delivery and courtesy were less acceptable as students' view of point.

**Correlation.** Pearson correlation had been used in this study to identify the relationship between TQM variables with student satisfaction and student loyalty and the relationship between student satisfaction and student loyalty. According to the [18], Pearson correlation measures the degree and direction of the linear relationship between two variables. The range of Pearson correlation coefficients (r) is from -1 and +1 which positive relationship indicates a positive relationship between two variables and negative relationship indicates a negative relationship between two variables.

Table 3 Pearson's Correlation Analysis between TQM Implementation Variables and Student Satisfaction on Online Teaching and Learning

|         |                     | TQM Variable | Student Satisfaction |
|---------|---------------------|--------------|----------------------|
| TQM     | Pearson Correlation | 1            | 0.815**              |
|         | Sig. (2-tailed)     |              | 0.000                |
| Student | Pearson Correlation | 0.815**      | 1                    |
|         | Sig. (2-tailed)     | 0.000        |                      |
|         | N                   | 199          | 199                  |

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

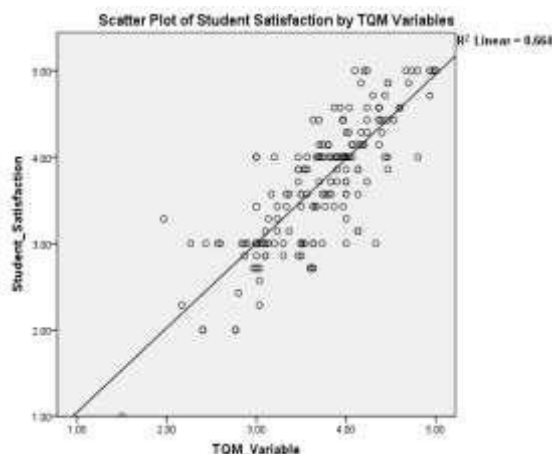


Figure 2 Scatter Plot of Student Satisfaction by TQM Implementation Variables

**Table 3** shows the correlation between TQM implementation variables and student satisfaction on online teaching and learning is 0.815 with a significance level of 0.000. This indicates that TQM implementation variables and student satisfaction on online teaching and learning have a strong significance level because of Sig 0.000 at the reading. From the data shown, TQM implementation variables has a strong relationship with student satisfaction.

**Figure 2** shows a positive moderate correlation with R2 value 0.664 ( $r=0.815$ ). This means that, increases or decreases of TQM implementation variables do significantly impact the increases or decreases of student satisfaction. These are being support by authors [5] that if the quality of education services provided is higher, the level of student satisfaction is also higher.

Table 4 Pearson's Correlation Analysis between TQM Implementation Variables and Student Loyalty

|                        |                 | TQM Variable | Student Loyalty |
|------------------------|-----------------|--------------|-----------------|
| <b>TQM Variable</b>    | Pearson         | 1            | 0.639**         |
|                        | Correlation     |              | 0.000           |
|                        | Sig. (2-tailed) |              | 0.000           |
| <b>Student Loyalty</b> | Pearson         | 0.639**      | 1               |
|                        | Correlation     |              | 0.000           |
|                        | Sig. (2-tailed) |              | 0.000           |
|                        | N               | 199          | 199             |

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

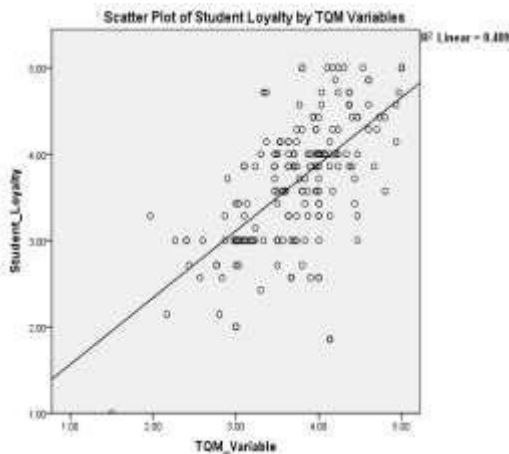


Figure 3 Scatter Plot of Student Loyalty by TQM Implementation Variables

**Table 4** shows the correlation between TQM implementation variables and student loyalty is 0.639 with a significance level of 0.000. This indicates that TQM implementation variables and student loyalty have a strong significance level because of Sig 0.000 at the reading. From the data shown, TQM implementation variables has a strong relationship with student loyalty.

**Figure 3** shows a positive moderate correlation with R2 value 0.409 ( $r=0.639$ ). This means that, increases or decreases of TQM implementation variables do significantly impact the increases or decreases of student loyalty.

Table 5 Pearson's Correlation Analysis between Student Satisfaction on Online Teaching and Learning and Student Loyalty

|                             |                 | Student Satisfaction | Student Loyalty |
|-----------------------------|-----------------|----------------------|-----------------|
| <b>Student Satisfaction</b> | Pearson         | 1                    | 0.685**         |
|                             | Correlation     |                      | 0.000           |
|                             | Sig. (2-tailed) |                      | 0.000           |
| <b>Student Loyalty</b>      | Pearson         | 0.685**              | 1               |
|                             | Correlation     |                      | 0.000           |
|                             | Sig. (2-tailed) |                      | 0.000           |
|                             | N               | 199                  | 199             |

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

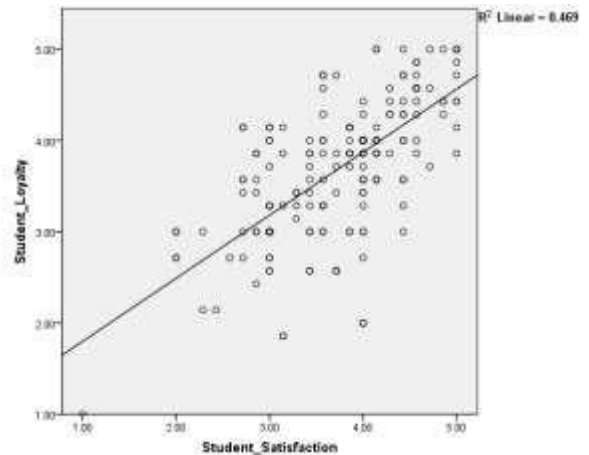


Figure 4 Scatter Plot of Student Loyalty by TQM Implementation Variables

**Table 5** shows the correlation between student satisfaction on online teaching and learning and student loyalty is 0.685 with a significance level of 0.00. This indicates that student satisfaction and student loyalty have a strong significance level because of Sig 0.000 at the reading. From the data shown, student satisfaction has a strong relationship with student loyalty.

**Figure 4** shows positive moderate correlation with R2 value 0.469 ( $r=0.685$ ). This means that, increases or decreases of student satisfaction do significantly impact the increases or decreases of student loyalty. These are being support by authors [6] thatsatisfied and loyal students can be invaluable to any educational institution for contributing time and money, positive advertising and as a source of future employment.

**Regression Analysis.** Bivariate regression analysis was performed to determine a relationship between student satisfaction and student loyalty while multiple regression analysis was developed to



determine the impact of TQM implementation variables on student satisfaction and student loyalty. For interpreting the regression, the researcher using t-value and p-value. The t-value of +/- 1.96 is the size of t-value that should only occur by random chance 5% of the time while a low p-value (< 0.05) indicates that there is a significant for each other relationship. Hypothesis were defined to study the significant effects between IV and DV:

- H1: There is significant relationship between Student Satisfaction and Student Loyalty
- H2: There is significant relationship between TQM Implementation Variables and Student Satisfaction
- H3: There is significant relationship between TQM Implementation Variables and Student Loyalty

Table 6 Regression Analysis Results Between Student Satisfaction and Student Loyalty

| Coefficients <sup>a</sup>   |                      |       |        |       |
|---|----------------------|-------|--------|-------|
| Model   |                      | Beta  | t      | Sig.  |
| β0  | (Constant)           | 1.109 | 5.590  | 0.000 |
| β1  | Student Satisfaction | 0.685 | 13.204 | 0.000 |
| R = 0.685 <sup>a</sup> , R Square = 0.469<br>F-value = 27.453, P-value = 0.000 <sup>b</sup> |                      |       |        |       |
| a. Predictors: (Constant), Student Satisfaction   |                      |       |        |       |
| b. Dependent Variable: Student Loyalty  |                      |       |        |       |

Based on the table 6, the R square is 0.469, so the independent variables justify 46.9% of the student loyalty. In other words, R square = 0.469 showed the impact of student satisfaction on student loyalty. This explained 46.9% student satisfaction on online teaching and learning affect the student loyalty. This means the student satisfaction on online teaching and learning driving the student loyalty. The bivariate regression equation can be determined by represented the following variables:

$$Y = \beta_0 + \beta_1 X$$

Y = Student Loyalty  
X = Student Satisfaction

Therefore, the bivariate regression equation can be determined by B value as:

$$Y = 1.109 + 0.691 X$$

The equation interpreted that the increase of student satisfaction will increase the student loyalty. The bivariate regression analysis demonstrates that the student satisfaction on online teaching and learning have significant positive influence on student loyalty. The findings of this study are consistent with the study results of previous studies done on student satisfaction and student loyalty and shows that a positive linear relationship exists. The t-value is 13.204 which is more than 1.96 where the p-value is 0.000 which is

less than 0.05. This indicates that the student satisfaction has a significant influence towards student loyalty, where the H1 was accepted which shows a significant effect of student satisfaction on student loyalty.

Table 7 Regression Analysis Results Between TQM Variables and Student Satisfaction

| Model   |                               | Beta           | t              | Sig.           |
|---|-------------------------------|----------------|----------------|----------------|
| β0  | (Constant)                    | 0.071<br>0.115 | 0.365<br>2.162 | 0.716<br>0.032 |
| β2  | Course Delivery               | 0.265          | 4.687          | 0.000          |
| β3  | Campus Facilities             | 0.028          | 0.446          | 0.656          |
| β4  | Courtesy                      | 0.341          | 4.897          | 0.000          |
| β5  | Customer Feedback Improvement | 0.218          | 3.116          | 0.002          |
| R = 0.832 <sup>a</sup> , R Square = 0.692<br>F-value = 27.453, P-value = 0.000 <sup>b</sup> |                               |                |                |                |

a. Predictors: (Constant), Customer Feedback Improvement, Commitment of Management, Course Delivery, Campus Facilities, Courtesy

b. Dependent Variable: Student Satisfaction

Based on table 7, TQM variables is the independent variable, R square = 0.692, so the independent variables justify 69.2% of the student satisfaction. In other words, R square = 0.692 showed 69.2% of the variation in the student satisfaction toward online teaching and learning that influenced by TQM implementation variables. The multiple regression equation can be determined by represented the following variables:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5$$

Y = Student Satisfaction

X1= Commitment of Management, X2= Course Delivery, X3= Campus Facilities, X4= Courtesy and X5= Customer Feedback Improvement

However, campus facilities do not have significant impact on student satisfaction, because the t-value (0.446) is less than +/- 1.96 and the p-value (0.656) is larger than 0.05. Therefore, the multiple regression equation for other variables can be determined by B value as:

$$Y = 0.071 + 0.115 X_1 + 0.265 X_2 + 0.341 X_4 + 0.218 X_5$$

The equation meant that the increase of all of the commitment of management, course delivery, courtesy and customer feedback improvement will increase the student satisfaction on online teaching and learning. Therefore, commitment of management (t = 2.162, sig. = 0.032), customer feedback and improvement (t = 3.116, sig. = 0.002), course delivery (t = 4.687, sig. = 0.000), and courtesy (t = 4.897, sig. = 0.000) had the linear relationship with student satisfaction. Other than that, the most dominant variables that affected the student satisfaction was courtesy because it obtained the largest coefficient score (0.341), followed by course delivery (coefficient = 0.265),

customer feedback and improvement (coefficient = 0.218) and commitment of management (coefficient = 0.115).

The analysis illustrates that all the TQM implementation variables (commitment of management, course delivery, courtesy and customer feedback improvement) have significant positive influence and give the impact toward student satisfaction on online teaching and learning except for campus facilities. The p-value is 0.000 (p-value < 0.05) which indicates that there is a significant impact of TQM implementation variables on student satisfaction. So, the H2 was accepted.

Table 8 Regression Analysis Results Between TQM Variables and Student Loyalty

| Model                            | Beta  | t     | Sig.  |
|----------------------------------|-------|-------|-------|
| β0 (Constant)                    | 0.706 | 2.617 | 0.010 |
| β1 Commitment of Management      | 0.183 | 2.499 | 0.013 |
| β2 Course Delivery               | 0.133 | 1.709 | 0.089 |
| β3 Campus Facilities             | 0.181 | 2.058 | 0.041 |
| β4 Courtesy                      | 0.033 | 0.349 | 0.728 |
| β5 Customer Feedback Improvement | 0.236 | 2.444 | 0.015 |

R = 0.645<sup>a</sup>, R Square = 0.416

F-value = 27.453, P-value = 0.000<sup>b</sup>

a. Predictors: (Constant), Customer Feedback Improvement, Commitment of Management, Course Delivery, Campus Facilities, Courtesy

b. Dependent Variable: Student Loyalty

Based on table 8, the R square is 0.416, so the independent variables justify 41.6% of the student loyalty. In other words, R square = 0.416 showed 41.6% of the variation in the student loyalty that influenced by TQM implementation variables. The multiple regression equation can be determined by represented the following variables:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5$$

Y = Student Loyalty

X1= Commitment of Management, X2= Course Delivery, X3= Campus Facilities, X4= Courtesy and X5= Customer Feedback improvement

However, courtesy and course delivery do not have significant impact on student loyalty, because the t-value (0.349 and 1.709) is less than +/- 1.96 and p-value (0.728 and 0.089) is larger than 0.05. Therefore, the multiple regression equation for other variables can be determined by B value as:

$$Y = 0.706 + 0.183 X_1 + 0.181 X_3 + 0.236 X_5$$

The equation meant that the increase of all of the commitment of management, campus facilities and customer feedback improvement will increase the student loyalty. Therefore, commitment of management (t = 2.499, sig. = 0.013), customer feedback and improvement (t =

sig. = 0.041) had the linear relationship with student loyalty. Other than that, the most dominant variables that affected the student satisfaction was customer feedback and improvement because it obtained the largest coefficient score (0.236), followed by commitment of management (coefficient = 0.183) and campus facilities (coefficient = 0.181).

The analysis interpret that all the TQM implementation variables (commitment of management, campus facilities and customer feedback improvement) have significant positive influence and give the impact toward student loyalty except for course delivery and courtesy. The p-value is 0.000 (p-value < 0.05) which indicates that there is a significant impact of TQM implementation variables on student loyalty. So, H3 was accepted.

## 4.0 CONCLUSION

The pandemic outbreak of Covid-19 led to the implementation of online teaching and learning, that allowing the university to use variety methods of online study. This research was conducted to analyze and assess the TQM implementation on (t = 2.444, sig. = 0.015) and campus facilities (t = 2.058,

Online teaching and learning with student satisfaction and student loyalty. The result will give the effect whether the online teaching and learning able to be implement in a good condition or not.

Research indicates that TQM implementation give effects on student satisfaction and loyalty where there are some variables of TQM be the most important factor that impacts the student learning. In fact, the implementation of online teaching and learning already be applied at several universities in oversea. That means this method of study is not the new one for the education institute.

There are 5 components of TQM on online teaching and learning that be construct in this research to measure the level of TQM practice in educational institutions. The student satisfaction and student loyalty will increase substantially if the TQM implementation's level is improved. Therefore, data analyses in this research also offer practical implications for online teaching and learning. TQM variables is validated in this research recognizes commitment of management, campus facilities, course delivery, courtesy and customer feedback improvement as essential determinants of student satisfaction and student loyalty on online teaching and learning.

In order to improve the TQM implementation on online teaching and learning over time, it is important, firstly, the university should build the connection between management, lecturers and students to ensure satisfaction and loyalty of the students as their customer. Course delivery and courtesy are the most impact TQM variables for student satisfaction towards online teaching and

learning. These variables might satisfy the students if the university give the attention on that variable.

For course delivery, lecturers teaching methods and workload management during online teaching and learning need to be further improved. These elements only get less satisfactory from the students. Therefore, the university should focus on the teaching methods and the workload management during online teaching and learning. Other than that, for courtesy, student feelings and problem are need to be taken into consideration by the lecturer and management more often especially during online teaching and learning. They might have to do several surveys to gather information about those matters. The lecturers also can participant by made some meeting among them and sharing their thought with each other's.

Secondly, the customer feedback and improvement give the most impact towards student loyalty. According to descriptive analysis of customer feedback and improvement, the less agreed by students is the lecturer gives students positive feedback on their submitted work online. The researcher found that students might be not satisfied with the lecturer's feedback. Based on the researcher's preference, the feedback should not only in the positive ways but it's based on the student's performance. In order to improve the lecturer's feedback, the university should able to compile with the course evaluation survey with more systematic. The lecturers should provide their feedback on all the assessments they provide to ensure that students get the benefit from the assessment feedback provided.

Thirdly, in order to attract the student loyalty, there are many things can be introduced to the students about the availability of online teaching and learning implementation. There are several techniques that universities can demonstrate to students. The university can use the results of testimonials or sharing sessions from old students as a marketing strategy in deliver the useful message to potential students about the university. Like Jain (2012) said that each of satisfied customer can introduce at least four new customers through word-of-mouth advertising. Thus, students that satisfied will lead to be a loyal student who can bring new students to enter the university for free by word-of-mouth advertising.

Lastly, based on data analysis in chapter 4, the campus facilities are the variables that do not have significant impact towards student satisfaction while course delivery and courtesy is the variables that do not have significant impact towards student loyalty. This result may not be valid because constructive elements taken from previous research that are not in Malaysia may make the constructive element unsuitable to be done in Malaysia. Besides, there are several reasons that can contributed to the invalid results such as wrong target of respondents or wrong constructive questions that can cause bias and make the results not significant.

However, the results could be valid if the students committed and sincere when answering the questions. The campus facilities may be not having significant impact towards student satisfaction during online teaching and learning delivery. This seems logical because the teaching sessions are conducted through online, students have to use internet coverage and their own laptops for online learning. Therefore, campus facilities do not provide a significant effect on student satisfaction because it is not very influential on online teaching and learning delivery. For the course delivery and courtesy that not give significant impact towards student loyalty, it may happen because of the difference preference of student loyalty itself. The students may not see course delivery and courtesy to make them ready to further their studies or share their thoughts to others about the university. They may feel that the university has already provided the best service to both of these elements. Thus, the commitment of management, campus facilities and customer feedback and improvement can influence the student retention.

#### Recommendation for Future Studies

The limitation in this study led to the recommendation for the future researcher. Almost every research regarding this topic used quantitative method design, the researcher suggesting to use another research approach in the future. Future studies will also follow study designs focused on qualitative methods, which include interviews, case studies, focus groups and observations.

Theoretical gaps in TQM implementation studies, especially regarding the approach to online teaching and learning, are also identified in this study. In order to establish more possible views, future research would need to follow additional elements in the TQM implementation model. The results will contribute to the newly developed of online teaching and learning and provide grounds for improvement of student experience on online teaching and learning.

Last but not least, future researcher should implement different sample size especially age group and location factor. As this study only focus the final year project students who have been long time exposed to the education teaching and learning. By having such multiple group analysis, it could help in getting other point of view from student in assessing online teaching and learning delivery by integrate the TQM implementation. Then, this research can be expanded by making cross-comparisons between various state that can be duplicated in other economies.

## Acknowledgement

This research was partially supported by Universiti Kuala Lumpur - Malaysian Institute of Industrial Technology (UniKL MITEC) and Majlis Amanah Rakyat (MARA) who provide the financial for the publication purposes. I also thank to UniKL MITEC for preparing the sample and data as desired.

## References

- [1] M. C. Magbanua, Customizing learning in the new normal, *Pressreader*, September 21, 2020.
- [2] S. Pokhrel and R. Chhetri, A Literature Review on Impact of COVID-19 Pandemic on Teaching and Learning, 2021. Available: <https://doi.org/10.1177/2347631120983481>
- [3] M. Ramachandran, N. C. Shivaprakash and S. K. Bose, Quality Assessment of Technical Education in Indian Engineering Institutions, vol 1, pp 973-977, 2013.
- [4] I. Mkheimer and M. Ibrahim, TQM Role in Achieving Student Satisfaction in Higher Education Institutions, March 2020.
- [5] P. B. Sakthivel, G. Rajendran and R. Raju, TQM Implementation and Students' Satisfaction of Academic Performance. *The TQM Magazine*, pp 573-589, 2020.
- [6] M. Afrasiabi, S. A. Helmi and K. Mohd-Yusof, Engineering postgraduates perceived service quality and its association with satisfaction and loyalty, 2018 *World Engineering Education Forum - Global Engineering Deans Council*, WEEF-GEDC 2018, pp 3-8, 2019. Available: <https://doi.org/10.1109/WEEF-GEDC.2018.8629582>
- [7] W. Farag and S. Ali, Can Online Delivery Result in Comparable Achievement of Course Outcomes and Student Success in Different Computer Science Courses? 2016.
- [8] Wong, R. When no one can go to school: does online learning meet students' basic learning needs? *Interactive Learning Environments*, 0(0), pp 1-17, 2020. Available: <https://doi.org/10.1080/10494820.2020.1789672>
- [9] A. J. Austin and S. Pervaiz, The relation between 'student loyalty' and 'student satisfaction' (A case of college/intermediate students at forman Christian college). *European Scientific Journal January*, vol 57(18), pp 100-117, 2017. Available: <https://doi.org/10.1080/3645765867976078087>
- [10] W. Helen and W. Ho, Building Relationship between Education Institutions and Students: Student Loyalty in Self-Financed Tertiary Education. *IBIMA Business Review Journal*, pp 1-22, 2011. Available: <https://doi.org/10.5171/2011.913652>
- [11] C. Evaluation, Course Evaluation. *Ecite online*, 2015 Retrieved from <https://online6.unikl.edu.my/EciteOnline/studEvaluation.htm?action=viewFormQuestion>
- [12] K. L. Wong, S. F. Ong and T.Y. Kuek, Constructing a survey questionnaire to collect data on service quality of business academics. *European Journal of Social Sciences*, vol 29(2), pp 209-221, 2012.
- [13] A. Wong, A. Woo and C. Tong, Student Satisfaction and School Reputation: The Moderating Role of Student Loyalty and School Image. *Journal of Marketing and HR*, vol 2(1), pp 113-125, 2016. Available: [www.scitecresearch.com](http://www.scitecresearch.com)
- [14] S. Hassan, M. F. Shamsudin and I. Mustapha, The effect of service quality and corporate image on student satisfaction and loyalty in TVET higher learning institutes (HLIs), *Journal of Technical Education and Training*, vol 11(4), pp 77-85, 2019. Available: <https://doi.org/10.30880/jtet.2019.11.04.009>
- [15] M. Tavakol, Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2011.
- [16] J. F. Hair, W. C. Black, B. J. Babin, R. E. Anderson and R. L. Tatham, Multivariate data analysis (7th ed.). *Englewood Cliffs (NJ): Prentice Hall*, 2010. Available: <http://dx.doi.org/10.1016/j.jmva.2009.12.014>
- [17] B. M. Bryne, Structural equation modeling with AMOS; basic concepts, applications, and programming (2nd ed.). *New York/London: Taylor & Francis*, 2010.
- [18] T. C. Chuan, M. R. Muhamad, T. C. Lian, S. Y. Wee and S. A. Asmai, Statistics with SPSS For Research. Melaka: Universiti Teknikal Malaysia Melaka, 2011.
- [19] D. K. A. Samad and R. Thiyagarajan, Tqm in Higher Education - a Conceptual Model to Achieve Excellence in Management, *International Journal of Management*, pp 618-629, 2015.
- [20] M. Militaru, G. Ungureanu and A. S. C. Crețu, The Prospects of Implementing the Principles of Total Quality Management (TQM) in Education, *Procedia - Social and Behavioral Sciences*, vol 93, pp 1138-1141, 2013. Available: <https://doi.org/10.1016/j.sbspro.2013.10.003>
- [21] S. Jain, Power of Word-of-Mouth Advertising, *International Journal of Management & Business Studies*, vol 2(3), pp 65, 2012.