# STUDENTS' SATISFACTION TOWARD UNIVERSITY HEALTH CENTER: A STRUCTURAL EQUATION MODELLING APPROACH

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## ABSTRACT

Students with good health contribute to overall academic performance, especially in higher education. In the university campus, the university health center provides medical and comprehensive health care services. These services include medical and dental treatment, counseling, first aid, and medication. This research explored the

perception of an undergraduate student towards a health center in the UUM Sintok campus by using the Structural Equation Modelling approach. Structural Equation Modelling has been selected as it is capable in analyzing structural relationships between important factors. Based on the investigation, there are several important factors have been highlighted, such as services, facility, waiting time and students' satisfaction. However, this study found that the most influential factor is services, while waiting time does not influence student satisfaction towards the university health center.

**Keywords:** Students' satisfaction, university health center, structural equation modelling.

## INTRODUCTION

Healthy students contribute to overall academic performance in higher education (El Ansari & Stock, 2010; Raskind, Haardörfer & Berg, 2019). By staying active, fit and healthy, students are able to focus more on the study (Bayat, 2020; Erwin, 2021), interact positively among each other, and more productive in completing tasks. As students spend an important part of their life in higher education, quality services provided in the university campus are deemed important to help them develop their quality of life (Jain, Sinha & De (2010); Chuah & Sri Ramalu (2011)). Ramli et al. (2018) found that sufficient infrastructure such as student accommodation, sports center, ample parking and reliable transportation has a direct impact towards students' academic achievement. While Gulwadi and Gliem (2019) reported that having a green campus, for example, will improve students' perception of their quality of life. Realizing the importance of satisfactory facilities inside the campus, Rastgoo (2017) has studied the knowledge management and innovation in one of Iran's health care service center inside the campus. Dat et al. (2021) also propose in utilizing university health care center to combat students' major mental problems in the hope to reduce suicide cases in Japan.

In Universiti Utara Malaysia, approximately, a total of 13,000 undergraduate students fully stay inside the campus in a given academic semester. Therefore, the university provides sufficient health center inside the campus to provide necessary medical care and monitor students and staff's health. University health center offers

medical and comprehensive health care services inside campus, including medical and dental treatment, counseling, first aid, and medication. Due to the university location that is far away from other medical facilities, this center is a sole provider for people inside the campus, thus the need for a continuous assessment on its quality of services.

There are number of research related to customer's satisfaction in health center including in Rao, Peters & Roche (2006), Sreenivas, Nethi, Suresh & Babu (2012), Bodur, Ozdemir & Kara (2001) and Jadhav, Lokhande, Naik, Rajderkar, Suryavanshi & Bhoye (2011), Rahmatiqa & Yuniko (2020). to name just a few. Rao et al. (2006) identified five factors that affect customers' satisfaction on the health center, which is medicine availability, medical information, staff behavior, doctor behavior, and hospital infrastructure. For outpatients' services, doctor behavior has the largest effect on general patient satisfaction, while for the in-patient's services, staff behavior has the largest effect on general patient satisfaction. Besides, waiting time is also found to be another important criterion that affects the satisfaction level among patients (Anderson, Camacho & Balkrishnan (2007); Bielen & Demoulin (2007); Harnett, Correll, Hurwitz, Bader & Hepner (2010)).

More specific works on the satisfaction at health center provided by higher education institutions include Ahmad, Aleng, Halim, Hamzah, Mohamed, & Ali (2004), Sirgy, Grzeskowiak & Rahtz (2007) and Jain, Sahney & Sinha (2013). Ahmad et al. (2004) extracted four factors that have a relationship with the score of students' satisfaction level which are the service counter, treatment rooms, pharmacy counter and waiting hall. There are works on the literatures that relate the factors with satisfaction level by using the structural equation model in Md Yusof, Misiran & Harun (2014); Hair, Sarstedt, Ringle & Mena (2012); Yoon & Uysal (2005).

Based on motivation from the previous study, this study is conducted to explore other important factors regarding students' satisfaction toward university health center. Therefore, the objective of this study is to identify important factors in relation to students' satisfaction and to explore their perception toward the health center that is situated inside the UUM campus. Using structural equation modelling, the

level of student satisfaction can be determined, and the relationship between the important factors and satisfaction can be established.

Subsequent sections in this paper presents methodology of this study which includes data collection, sampling method, factor analysis and a brief introduction on structural equation modelling. The following section will offer results and discussion on the overall analysis of students' satisfaction towards university health center using structural equation modelling. The last section concludes this paper with recommendations and conclusions.

## METHODOLOGY

### Data Collection

A set of questionnaires was distributed for data collection. A sample of respondents, which size is 373, UUM undergraduate students were selected for the purpose of this research. This sample size was chosen based on a suggestion from Uma & Roger (2010). They suggested that for the population size of approximately 13,000, the suitable sample size is around 373. Table 1 shows the questions asked in the distributed questionnaires.

**Table 1**

*List of Questions*

| No. | Questions |
| --- | --- |
| Q1 | In general, I am satisfied with the services provided by Health Center. |
| Q2 | The doctor always listened to me and valued my opinions. |
| Q3 | The doctor explained things in a way that I could understand. |
| Q4 | I have received a high level of care at Health Center. |
| Q5 | Before giving me the medicine, the staff will explain to me what the medicine was for. |
| Q6 | The staffs are friendly and helpful. |
| Q7 | In general, I am satisfied with the Health Center environment. |
| Q8 | The cleanliness of the service counter let me satisfied. |

(continued)

| No. | Questions |
| --- | --- |
| Q9 | I feel comfortable at the waiting hall when I wait for services. |
| Q10 | I am satisfied with the pharmacies' environment. |
| Q11 | I feel comfortable at the treatment room when I am visiting the doctor. |
| Q12 | There are enough adequate seating facilities at the health center. |
| Q13 | I am satisfied with the overall waiting time at Health Center. |
| Q14 | I spend a long time to register at the Health Center counter. |
| Q15 | I spend a long time to visit the doctor. |
| Q16 | I spend a long time at the pharmacy counter to take my medicine. |
| Q17 | I spend a long time to schedule time for the appointment. |
| Q18 | I spend a long time getting services. |

## Sampling Method

A stratified random sampling and systematic sampling methods were used for this study, starting with a stratified sampling method to identify the selected strata. In this study, there are four strata selected. The strata represent the students' residential halls. After that, the respondents were selected using the systematics sampling method.

## Factor Analysis

A factor analysis technique was used in order to determine the possible factor, construct or domain related to a certain area of investigation. The process involved the data reduction and simplification of variable to explain the related factors. Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was conducted prior to conducting the factor analysis, where the value must be more than 0.6 in order to be sufficient (Kaiser, 1974). The outcome demonstrated sufficient proof that our matrix of correlations is not an identity matrix, therefore we can proceed with factor analysis. Factor analysis was carried out using SPSS software.

## Structural Equation Model

The structural equation model (SEM) was used to construct the relationship between factors. SEM is a type of multivariate analysis that investigates multiple relationships between several dependent and independent variables. It is also a most efficient estimation technique for a series of separate multiple regressions simultaneously.

This is because SEM is an extension of path analysis, but it is for a more elaborate set of methods. SEM can be used to test the hypothesis of existing (confirmatory) theories or to look for patterns among information when there is limited information on the relationship of certain variables (exploratory) (Hair, Ringle, & Sarstedt, 2013).

## RESULTS AND DISCUSSION

### Descriptive Analysis

Descriptive analysis showed that 74% of respondents visited UUM health center less than two times per semester. 53.9% of respondents have moderate satisfaction toward UUM health center. The result also showed that the students prefer to pay for medical charges once they get the services (66%) rather than to pay via school fees (with 34% students prefer to fix charges). 49.9% of students choose good services as the most importance issue to affect their level of satisfaction, followed by facility (27.3%) and waiting time (22.8%).

### Reliability Analysis

The summary results of reliability show that all the values are exceeded 0.8, thus the reliability values satisfied all the items. Based on Table 2, it is verified that the questionnaire set is good and reliable.

**Table 2**

*Reliability Analysis*

| Item | Cronbach Alpha |
|------|----------------|
| All items in questionnaires | 0.875 |
| Services | 0.812 |
| Facility | 0.932 |
| Waiting Time | 0.736 |

### Factor Analysis

Kaiser–Meyer–Olkin (KMO) index for this research was calculated at 0.873, which suggested that the degree of common variance is good. Thus, factor analysis can be conducted, and the data can be grouped into a smaller set of underlying factors. In addition, Table 3 shows the

total amount of variance for the initial eigenvalues. The first factor accounts for 34.897% of the variance, the second factor accounts for 22.142% of the variance and the third factor accounts for 1.0578% of the variance, whereas all remaining factors are insignificant. The three factor accounts totaling to 67.617% of the total variance.

Table 4 shows the three factors being suggested, which are services, facility and waiting time. C2, C3, C4, C5 and C6 belong to Factor 3, which is the services; D2, D3, D4, D5 and D6 belong to Factor 1 that is the facility; and E2, E3, E4, E5 and E6 belong to Factor 2, which is the waiting time.

**Table 3**

*Initial Eigenvalues*

| Component | Initial Eigenvalues | |
|---|---|---|
| | **Total** | **% of Variance** |
| 1 | 5.235 | 34.897 |
| 2 | 3.321 | 22.142 |
| 3 | 1.587 | 10.578 |
| 4 | .684 | 4.557 |
| 5 | .598 | 3.983 |
| 6 | .529 | 3.526 |
| 7 | .479 | 3.197 |
| 8 | .441 | 2.940 |
| 9 | .383 | 2.557 |
| 10 | .338 | 2.251 |
| 11 | .329 | 2.192 |
| 12 | .303 | 2.023 |
| 13 | .277 | 1.845 |
| 14 | .262 | 1.746 |
| 15 | .235 | 1.566 |

**Table 4**

*Rotated Component*

| | 1 | 2 | 3 |
|---|---|---|---|
| C2 | | | .804 |
| C3 | | | .831 |

(continued)

|     | 1     | 2     | 3     |
|-----|-------|-------|-------|
| C4  |       |       | .823  |
| C5  |       |       | .615  |
| D2  | .798  |       |       |
| D3  | .813  |       |       |
| D4  | .851  |       |       |
| D5  | .795  |       |       |
| D6  | .845  |       |       |
| E2  |       | .784  |       |
| E3  |       | .830  |       |
| E4  |       | .771  |       |
| E5  |       | .839  |       |
| E6  |       | .835  |       |

## Confirmatory Factor Analysis

Figure 1 is the hypothesis model that was determined at the beginning of the research, which was based on the literature survey. From this model, the value of the Root Mean Square Error Approximation (RMSEA) is recorded as 0.086, which shows that the value is more than 0.08. The Goodness of Fit (GFI) is 0.85, Comparative Fit Index (CFI) is 0.881, (Tucker Lewis Index) TLI is 0.862, and Normed Fit Index (NFI) is 0.846, in which all are less than 0.9. Only the ratio is fit to the parsimonious fit that is less than 5. There is some index value that is not fulfilled the criteria, so it can be concluded that the hypothesis model is not a fit model. Thus, the next step is processing the fitness of the measurement for the individual measurement model.

Figure 2 shows the initial model and the final model for the services factor. The initial model (left diagram) is not fit yet. From Modification Index (MI) values, showed that item C2, item C3, item C5 and item C6 are highly correlated, in which these four items are linked to obtaining a fit model (right diagram).

Figure 3 shows that the initial and final model for the facility factor. The entire index is fit to the requirement; in which it is remained without undergoing any changes.

Figure 4 shows the initial and final model for the Waiting Time factor. The result shows that the RMSEA is not fit, which is 0.102 (>0.08) for the initial model. As item E3, item E4, item E5 and item E6 are found to be highly correlated; these four items are linked to getting the fit model (final model).
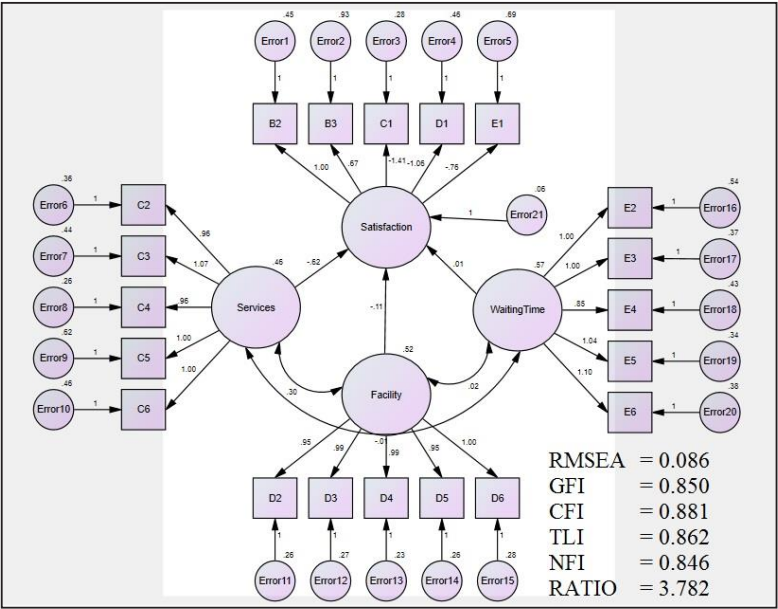
**Figure 1**

*Hypothesis Model*



**Figure 2**

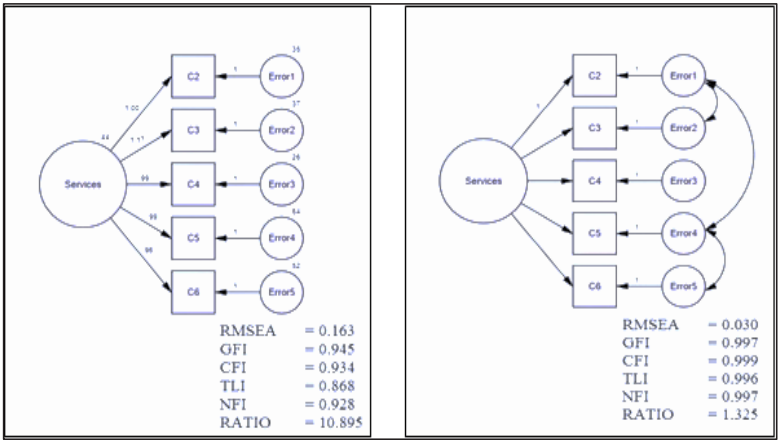*Initial Model (Services) and Final Model (Services)*

**Figure 3**
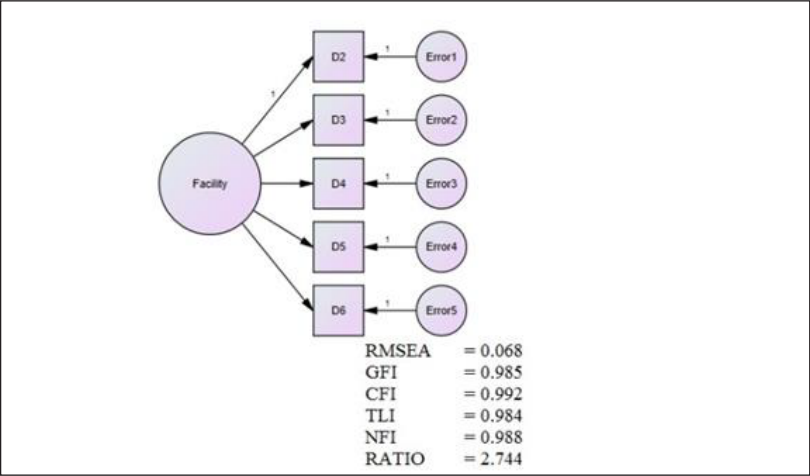
*Initial and Final Model (Facility)*



**Figure 4**

*Initial Model (Waiting Time) and Final Model (Waiting Time)*
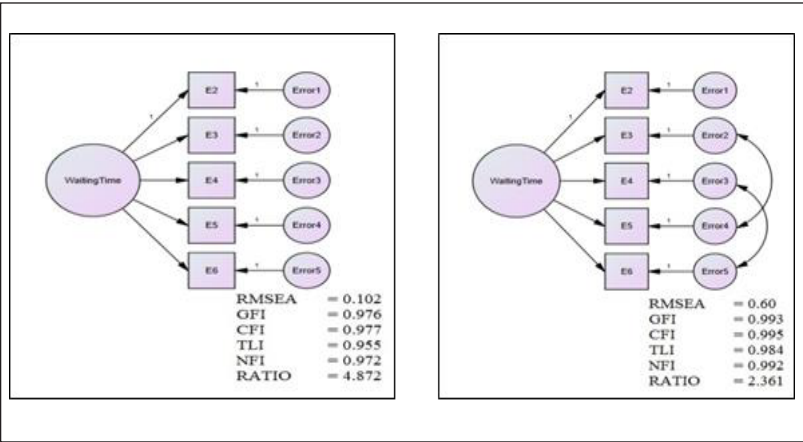


Figure 5 indicates that the correlation between Services and Facility is 0.31, Facility and Waiting Time is 0.02, and Services and Waiting Time is -0.01. Since all measures are less than 0.85, it can conclude

that discriminant validity is achieved, and a structural model can be constructed. The model is fit, where all index is satisfactory.

**Figure 5**

*The Measure of Correlation between All Factors*
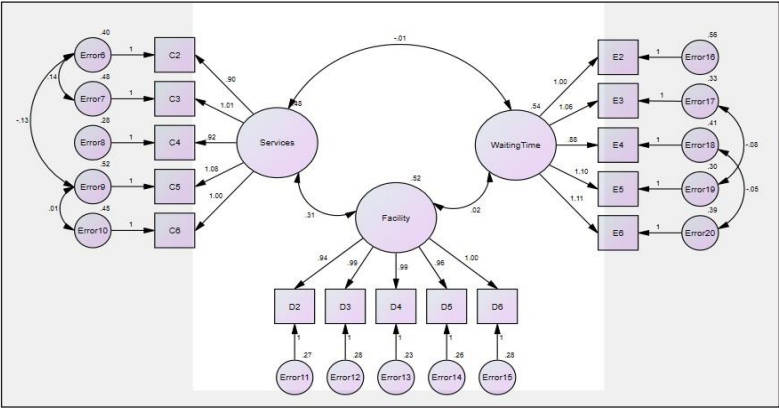


**Structural Equation Modelling (SEM)**

Figure 6 shows the initial model that is not fit yet except for RMSEA, CFI, and Ratio, the GFI, TLI, and NFI. The loading for item B3 is 0.349, which is less than 0.6 and item B2 and item C1 have a high modification index of 16.911, greater than 15. Item B3, together with link item B2 and item C1 that is highly correlated, were deleted to improve the model.
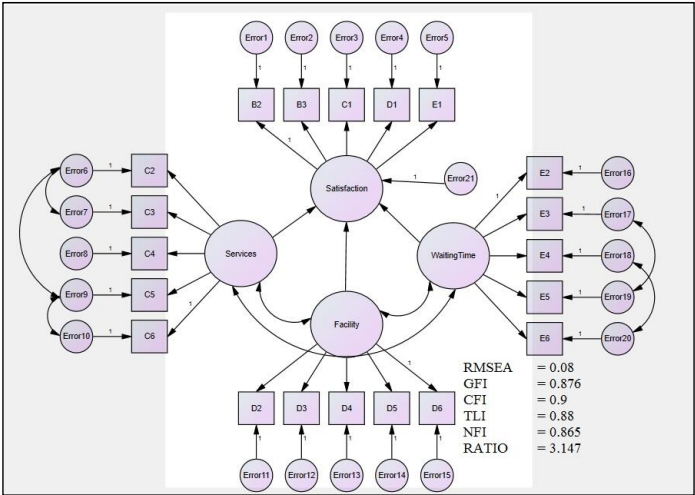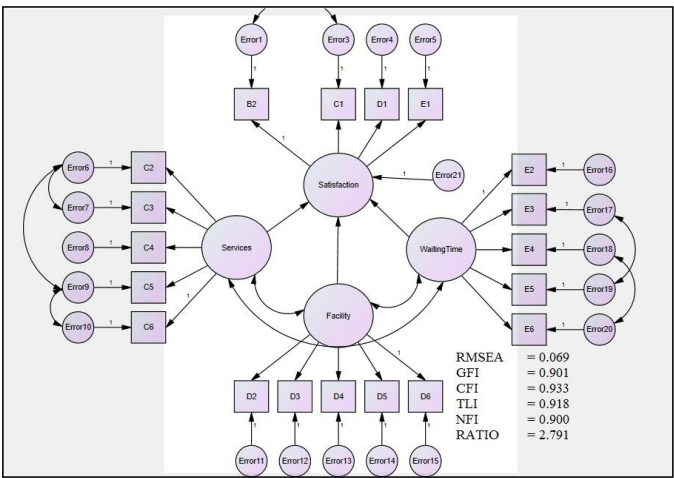
**Figure 6**

*Initial Model for SEM*



Figure 7 show the final SEM model after modification was done. The final model is satisfactory with the absolute fit, incremental fit and parsimonious fit.

**Figure 7**

*Final Model for SEM*

Based on Figure 7, the final factors involved in this research has been identified. The factors are services, facilities and waiting time. Furthermore, referring to Table 5, it can be seen that, only two factors are significant for students' satisfaction towards university health center. The factors are services and facility. Both gave significant values. However, the waiting time factor does not influence student satisfaction towards the health center.

**Table 5**

*Regression Weights*

|  | Estimate | S.E. | C.R. | P | Decision |
|---|---|---|---|---|---|
| Satisfaction <--- Services | -.399 | .062 | -6.396 | *** | Supported |
| Satisfaction <--- Facility | -.229 | .043 | -5.377 | *** | Supported |
| Satisfaction <--- Waiting Time | -.012 | .023 | -.536 | .592 | Not Supported |

Table 6 showed that the highest regression weight is services (0.689), followed by facility (0.408) and waiting time (0.022). This indicates that services have a high impact on students' satisfaction towards university health center.

**Table 6**

*Standardized Regression Weight For each Factor*

|  |  |  | **Estimate** |
|---|---|---|---|
| Satisfaction | <--- | Services | -.689 |
| Satisfaction | <--- | Facility | -.408 |
| Satisfaction | <--- | Waiting Time | -.022 |

## CONCLUSION

Structural equation modelling in this study suggests that the most influential factor on student satisfaction towards UUM health center is services, while waiting time does not have influence on student satisfaction. This may be caused by the importance of quality in services, which is deemed as highly important to patients in the health center. Thus, UUM health center needs to provide health and medical services to UUM students and staff at their utmost quality of services.

This finding may be able to help UUM management to improve the health center on the campus.

## ACKNOWLEDGMENT

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