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*Original Paper*

# Factors that Influence Quality of Life among Undergraduate Students: A Case Study Using Structural Equation Modelling (SEM) Approach

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## Abstract

The concept of quality of life broadly encompasses how individuals evaluate the goodness of multiple aspects of their lives, as there are a range of barriers to develop a meaningful understanding of quality of life (QoL). The purpose of this study is to identify factors that contribute to the quality of life of undergraduate students. The respondents of this cross-sectional sample were 273 undergraduate students from the School SSS, who were chosen using non-probability snowball sampling process. The collection of primary data was carried out using questionnaire, including demographic and quality of life questions. Analysis of the data was conducted through SPSS and Amos software. According to the analysis using Exploratory Factor Analysis and Structural Equation Modelling, there are six factors that contribute to the QoL for the student, which are family, friends, academic, social wellbeing, physical and financial and environment.

**Keywords:** quality of life, students, exploratory factor analysis, structural equation modelling

## 1. Introduction

Quality of life (QoL) concept is mainly different for each person, as they measure the goodness of some aspect of their own life. Despite, wellbeing also often referred with quality of life. Quality of life also can be described as life satisfaction that reflects his/her individual lifestyle which has been portrayal by themselves (Shareef et al., 2015). QoL is a perception of individual's position in life that mainly focus on the context of the value systems and culture that they live which relate to their expectation, goal, concerns and standard (WHOQOL, 2020).

Quality of life is related with an optimistic sense of value such as happiness, health, wealth, success and satisfaction (Bowling, 1995). Life satisfaction is a personal appraisal towards the QoL, since the judgment of life satisfaction evaluation has a huge psychological component (Theofilou, 2013). In the context of the distinction from related constructs, it is vital to acknowledge that personal wellbeing has both cognitive and affective component.

University are the new place for students because of the period of change for youngster in developing new skills, gain knowledge, expand social network and experiences. Students in the university record a low QoL and a worst perception of their health status, due to a greater circumstance of discomfort that they live throughout the journey of the study, specifically in course with a serious poignant load, for instance medical school (Messina, 2016).

The access and satisfaction to college academic resources, easy walking, transportation and areas for public interaction give a significant contribution to overall quality of college life (Arslan & Akkas, 2014). Student who have low confident can lack their social activity. Better QoL can be contributed by

the social activities, such as engagement in resident associations and non-profit organizations (Aripin & Puteh, 2017).

## **2. Materials and methods**

### *2.1 The Development of Construct Items*

The quality of life instrument was developed and made up of few aspects of interest which to determine the factors that influence the QoL. These aspects are based on the previous studies. Among the aspects are family, friends, academic, social, financial, environment etc. The aspects of QoL were embedded in 60 items in order to examine the factors that contribute to the QoL among undergraduate students.

### *2.2 Instrument*

The instrument was developed in Google form survey. It consists of section A and section B. Section A included all the demographic details such as races, gender, course, current year of study and current CGPA. Meanwhile, Section B was constructed with 60 items from the aspects that related to QoL of undergraduate student.

Next, the validity process of the questionnaire was conducted through content validity. In this process, the instrument was verified by the expert before distributed it to the respondents. Lastly, the reliability of the variable is tested by using Cronbach's alpha to confirm that the questionnaire is reliable, acceptable and have an excellent internal consistency to the analysis.

### *2.3 Measurement Scale*

The instrument for this study was established based on the 60 developed items and intend to identify the factors that influence QoL among undergraduate student. All the items were measured at individual level. In section A, there was some closed-ended questions such as races, gender, course, current year of study and current CGPA were asked. Section B which consists of 60 items related to quality of life has employed the 7-point semantic scale. These 7 points were range from 1 (strongly disagree) to 7 (strongly agree) and the measurement scale is constructing to measure the quality of life among undergraduate students.

### *2.4 Data Analysis*

This study used exploratory factor analysis. This analysis is suitable to identify the number of variables and to examine the internal consistency between variables (Williams, Onsman & Brown (2010). Then, the test of Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy, and Bartlett's Test of Sphericity are conducted to assess the reliability of the factor analysis. The recommended Kaiser-Meyer-Olkin (KMO) index is above 0.60 and the Bartlett's Test of Sphericity is significant for  $p$ -value  $< 0.05$  (Tabachnick, Fidell, & Ullman, 2007).

Next, confirmatory factor analysis is used to verify the factor structure of a set of observed variables (Suhr, 2006). It was used to test the hypothesis that there is a relationship between observed variables and its underlying latent construct. This analysis required five steps in general, which are model specification, model estimation that fit the model, evaluation of the model fit, model modification and interpretation of loadings and related statistics.

Finally, the EFA and CFA was combined, and it called as structural equation modelling. SEM is used to represent, estimate, and it is used to analyze the structural relationship between measured variables and latent constructs (Suksawang, 2014).

## **3. Results and Discussion**

Based on Table 1, Cronbach's alpha value (0.902) exceed 0.60. Hence, this indicates that the questionnaires are reliable to proceed with the analysis. Next, Table 2 illustrates that the KMO value of 0.872, which greater than 0.6 and the Bartlett's test shows the significant value since the  $p$ -value is lower than 0.05, which represent the data is acceptable for the factor analysis.

Table 1. The Reliability Statistic for all items

Cronbach's alpha	<i>N</i>
0.902	60

Table 2. KMO and Bartlett's test for all items

KMO Measure of Sampling Adequacy	0.872
Bartlett's test of Sphericity	Sig: 0.000

Principal component analysis (PCA) and orthogonal varimax rotation being applied in this factor analysis, since it is the most common method used by researchers. Table 3 shows that there are six factors should be retained since the eigenvalue greater than one with cumulative variance of 54.545%.

Table 3. Total variance explained

Component	Initial eigenvalues			Rotation sums of squared loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.732	23.848	23.848	5.873	13.052	13.052
2	4.687	10.415	34.264	4.801	10.669	23.721
3	3.727	8.283	42.547	4.513	10.029	33.75
4	1.921	4.27	46.816	3.762	8.359	42.109
5	1.84	4.088	50.904	2.916	6.479	48.588
6	1.638	3.641	54.545	2.681	5.957	54.545

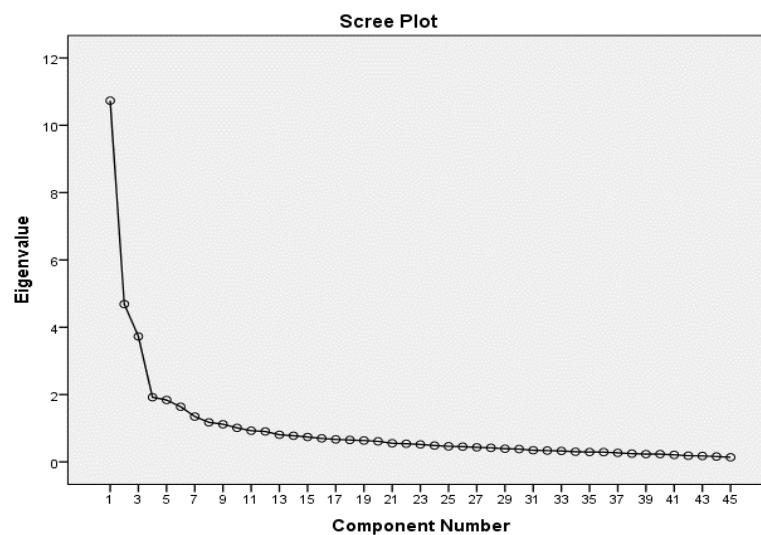


Figure 1. QoL scree plot

Figure 1 demonstrates the scree plot graph with the eigenvalue on vertical axis against the component/ factor number on the horizontal axis. The first sixth components show the values in the figure is

immediately above. While, the next factor shows almost the flat until the last factor as the eigenvalue decreases, which is mean that the successive factors are consider for smaller amount of total variance explained.

Table 4. The Reliability Statistic for 28 items after factor analysis

Factors	Cronbach's alpha	N
F1: Family	0.916	9
F2: Friends	0.832	6
F3: Academic	0.869	7
F4: Social wellbeing	0.775	3
F5: Physical and financial	0.718	4
F6: Environment	0.753	3
Overall	0.891	32

The 32 items that remained are tested for reliability. It is displays that the Cronbach's alpha for 32 items left with value of 0.891. Next, the Cronbach's alpha for each variable was exceed the minimum value of 0.6, which indicates that the items and the factors that contribute to the QoL are acceptable and reliable.

3.1 Confirmatory Factor Analysis

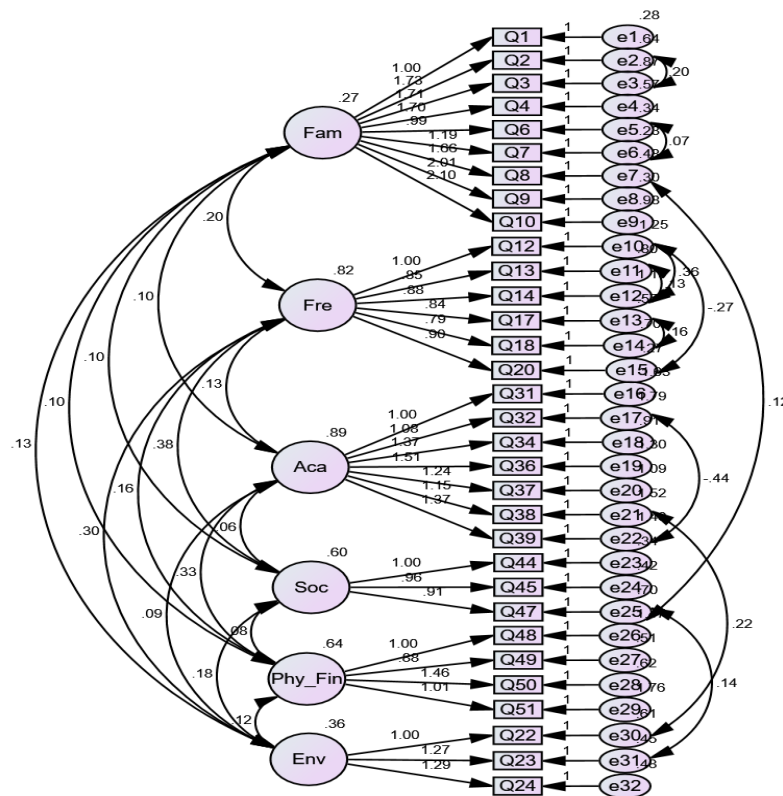


Figure 2. Constructed model for confirmatory factor analysis QoL

Table 5. Goodness-of-Fit for confirmatory factor analysis QoL

Goodness-of-Fit Results						
$\chi^2/df$	GFI	AGFI	TLI	IFI	CFI	RMSEA
1.594	0.861	0.833	0.927	0.936	0.935	0.047

Based on the result presented in table above,  $\frac{\chi^2}{df} = 1.594$  (less than 3) indicates an adequate fit, GFI = 0.861, AGFI = 0.833 (higher than acceptable value 0.8), TLI = 0.927 (higher than 0.9), IFI = 0.936 (higher than 0.9), CFI = 0.935 (higher than 0.9) and RMSEA = 0.047 (less than 0.08). All the indicators' values meet the acceptable value and some meet the perfect value, which proves good fit of model.

3.2 Structural Equation Modelling

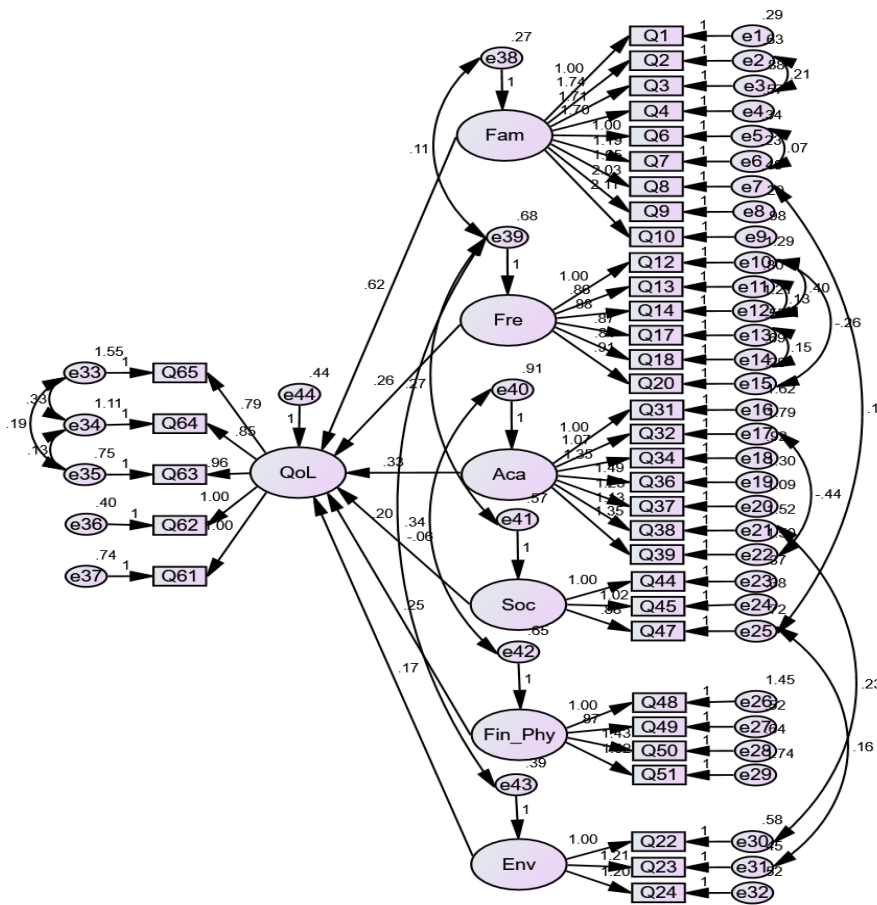


Figure 3. Constructed model for Structural Equation Model for Student's Quality of life

Table 6. Goodness-of-Fit for Structural Equation Model analysis QoL

Goodness-of-Fit Results						
$\chi^2/df$	GFI	AGFI	TLI	IFI	CFI	RMSEA
1.713	0.828	0.800	0.901	0.911	0.910	0.051

Table 6 shows the Goodness-of-Fit result for the model of Structural Equation Model analysis QoL. Based on the result presented in table above,  $\chi^2/df = 1.713$  (less than 3) indicates an adequate fit, GFI = 0.828, AGFI = 0.800 (reach an acceptable value 0.8), TLI = 0.901 (higher than 0.9), IFI = 0.911 (higher than 0.9), CFI = 0.910 (higher than 0.9) and RMSEA = 0.051 (less than 0.08). All the indicators' values meet the acceptable value and some meet the perfect value, which proves good fit of model.

### 3.3 Hypothesis Testing

The full model can now be tested utilizing SEM for hypothesis testing purpose after the measurement model fit are necessary reliability and the model fits the data relatively well. In this part there are six variables with six hypotheses need to be tested. All the hypotheses are stated below:

$H_1$ : There is significant relationship between Quality of Life and Family.

$H_2$ : There is significant relationship between Quality of Life and Friends.

$H_3$ : There is significant relationship between Quality of Life and Academic.

$H_4$ : There is significant relationship between Quality of Life and Social wellbeing.

$H_5$ : There is significant relationship between Quality of Life and Financial and Physical.

$H_6$ : There is significant relationship between Quality of Life and Environment.

Table 7. Beta value for hypothesis testing of QoL

Variable	$\beta$	Standard error	Critical ratio	$p$ -value	Result on Hypothesis
Family	0.330	0.072	4.592	<0.001	Supported
Friends	0.255	0.098	2.592	0.009	Supported
Academic	-0.061	0.090	-0.683	0.494	Not Supported
Social wellbeing	0.165	0.108	1.525	0.127	Not Supported
Financial & Physical	0.622	0.119	5.242	<0.001	Supported
Environment	0.252	0.085	2.985	0.003	Supported

Table 7 shows that all six factors (Family, Friends, Financial & Physical and Environment) have significant relationship with quality of life since all the  $p$ -value are less than 0.05, and the factors have positive coefficient towards the quality of life. Whilst, Academic and Social wellbeing does not have relationship with the quality of life for the undergraduate student, since the  $p$ -value are greater than 0.05. Academic has negative coefficients, whereas Social wellbeing has positive coefficient towards the student's quality of life.

## 4. Conclusions

This study reveals that from EFA there are six factors that contribute to the QoL for the undergraduate student, which are Family, Friends, Academic, Social wellbeing, Financial & Physical, and Environment. Next, the value of Cronbach alpha for the six factors is 0.891 meanwhile the KMO's value is 0.876 and the Bartlett's Test of Sphericity shows to be significant. The final measurement model of CFA conclude that all the factors has a good fit and satisfied all the assumption. Next, all the variables are being tested by using SEM, based on the result the independent variables of Family, Friends, Financial & Physical and Environment have significant relationship with quality of life since all the  $p$ -value are less than 0.05, and the factors has positive coefficient towards the quality of life.

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