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### Factors that Influence the Quality of Life Among Undergraduate School of Quantitative Sciences (SQS) Students in Universiti Utara Malaysia (UUM)

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#### Abstract

The concept of quality of life broadly encompasses on how an individual measures the goodness of multiple aspects of their life, as there are number of challenges to develop a meaningful understanding of the quality of life. The purpose of this study is to identify the factors that contribute to the quality of life among undergraduate SQS students. The respondents of this cross-sectional study were 273 undergraduate students from School of Quantitative Sciences, which was selected via convenient and snowball non-probability sampling method. The collection of the primary data was performed using a questionnaire including demographic and quality of life questions. Analysis of the data was conducted through Statistical Package for the Social Sciences (SPSS) version 2.6. All the 32 items are tested for its' reliability using the Cronbach's alpha, and KMO's. The values are 0.891 and 0.876 respectively. According to the results, there are six factors that contribute/ influence the QoL for the undergraduate SQS students that involved in this study, which are family, friends, academic, social wellbeing, physical and financial, and environment. The value of Cronbach alpha for each factor indicates that the reliability of internal consistency is high and reliable and the KMO's value for the factor pattern is meritorious and the Bartlett's test of sphericity also resulted with a significant value of  $p < 0.05$ .

**Keywords:** quality of life, social wellbeing, exploratory factor analysis

#### Introduction

Quality of life (QoL) concept is mainly different for each person, as they measure the goodness of some aspect of their own life. Wellbeing also often referred with quality of life. Thus, quality of life 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 (World Health Organization, 2020). It is a broad comprise concept that affected in a complex way by the person's psychological state, physical health, personal belief, social connection and their relationship to salient traits of their surroundings.

Bowling (1995) claimed that usually quality of life is related with an optimistic sense of value such as happiness, health, wealth, success and satisfaction. 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. Particularly QoL are important

among the university students, because of the process of formation occur at this place, where it is chosen professionally and personally by every student.

Additionally, the concept of QoL used to signify the general wellbeing of societies or persons. 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, Quercioli, Troiano, Russo, Barbini, Nistico & Nante, 2016). Indicative list of QoL indicators are grouped in the categories of education, social, leisure/ recreation, health, nutrition, urbanization, communications, conditions and hazards, security, natural, shelter quality, economic conditions, soil quality, water quality and air quality. Next, murders and non-negligent manslaughter, burglary, robbery, forcible rape, the aggravated assault, total crime, average suspended particulate matter, congestion, auto theft and average benzene-soluble organic matter are the effect of the size of city on the magnitude of the aforementioned QoL indicators which have been investigated.

University are the new place for students because of the period of change for youngster in developing a new skills, gain knowledge, expand social network and experiences. Mostly students will be facing stressful and pressure life event because they mediate changes in community, relationships and lifestyle. High stress among students may affect the social and psychological aspect towards their life and their QoL. It is crucial to explore quality of life among the student, since they experience a variation of stressors in the university, which include stressful exams and hefty study burdens (Owusu & Essel, 2017). Alternatively, performance of academic is also a part of QoL. This is because students who have a good QoL can achieve better in academics (Ofoghi, Sadeghi & Bahaei, 2016). Barker, Howard, Galambos, and Wrosch (2016) found that commonly students that are happy displayed the highest enhancements in academic achievement over time. This positive quality of life has been made known to have a confirming influence on academic accomplishment among university students.

Generally, Arslan and Akkas (2014) stated that 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. Student who have low confident can lack their social activity. Aripin and Puteh (2017) mentioned that a better QoL can be contributed by the social activities, such as engagement in resident associations and non-profit organizations. Past research from Messina, Querciolo, Troiano, Russo, Barbini, Nistico and Nante (2016) suggested that there are many factors that contribute in QoL among students compared to the general population and suggested that for further studies. Therefore, this study seeks to identify the factors that contribute to the quality of life among undergraduate SQS students in Universiti Utara Malaysia.

## **Literature Review**

### ***Quality of Life (QoL)***

QoL is how people measured the goodness of their life in multiple aspects. Diener, Suh, Lucas, & Smith (1999) said it included an emotional reaction to sense of life satisfaction and fulfilment, life occurrences, disposition and contentment with personal relationship and work. Based on the 11th Malaysian Plan 2016-2020, improving the QoL is one of the major agendas and the main focus of Malaysian government.

In addition, QoL is a human need which are fulfilled with their perceptions of subjective wellbeing. Despite, it become a role of policy makers and professionals to provide opportunities for the people to be able to meet their desired wellbeing (Costanza et al., 2005). Idris et al (2016) said that QoL is one of the biggest challenges in reducing gap that exists between various groups and community. Generally, quality of life has increased positively with improvement in environment which include physical and natural surroundings, education, health status, age, culture, safety as well as economic development level (Yasin et al, 2012).

## ***Variables in Quality of Life***

Based on previous research, there are some variables or criteria that are part of quality of life. These include family, friends, environment, academic, financial and social activities (Golics, Basra, Finlay & Salek, 2013). Brennan & Rosenzweig (2008) found family supports usually consists formal and informal, and it will empower each of the family member to raise their degree of involvement in a changed life environment. Next, social support from friends and family have been related towards a physical health and positive mental, and some researchers suggested that to be the most consistent and important variable in individual health outcomes (Turner & Turner, 2013).

Significantly, Plagnol (as cited in Aripin & Puteh, 2017) defines that financial satisfaction as a fundamental part of overall life wellbeing and satisfaction. Financial and job security is the key element in measuring the studies regarding quality of life (Pajaziti, 2014). A better QoL can be contributed by the social activities, such as engagement in resident associations and non-profit organizations related (Aripin & Puteh, 2017). The consequence of carrying out activities on life satisfaction is a gauge of overall QoL.

## ***Exploratory Factor Analysis (EFA)***

EFA is a part of factor analysis that is utilized to observe and measure variables that can be minimise to lower latent variables that share a common variance, and it is also applicable for the dimensionality reduction (Bartholomew, Knott & Moustaki, 2011). Exploratory factor analysis is a method where researcher wants to determine the number of factors influence the variables and to analyse which variable need to belong together (DeCoster, 1998).

Clearly, McDonald (1985) explained a basic hypothesis of EFA that have the standard latent factors to be discovered in the dataset. Next, the goal in EFA is to identify the minimal value of common factors. Exploratory factor analysis is widely utilized and broadly applied in statistical method. Lovett, Zeiss and Heinemann (2002) said exploratory factor analysis was used for a variation of application, likes to develop an instrument for the evaluation of school principal, to determine the types of services that should be offered to college students (Majors & Sedlacek, 2001) and to assess the incentive of high school students in Puerto Rican (Morris, 2001).

## **Methodology**

### ***The Development of Construct Items***

The quality of life instrument was developed and made up of the six aspects of interest to determine the factors that influence the QoL. These aspects are based on the previous study.

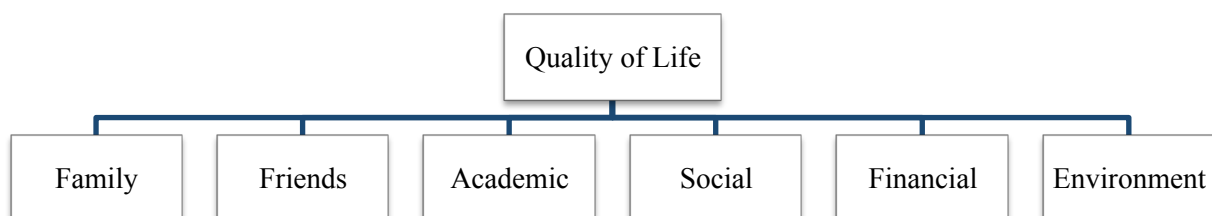


Figure 1: Six aspects of QoL

Figure 1 shows the six aspects of QoL in which 60 items were embedded in order to examine the factors that contribute to the QoL. All the items were constructed according to the previous study regarding the student quality of life.

## ***Instrument***

The instrument that has been applied in this study is Google form survey or questionnaire. It consists of section A and section B. In section A, it has 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 six aspects that related to QoL of undergraduate student.

Next, the validity process in this study 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 the data are reliable, acceptable and have an excellent internal consistency to the analysis.

## ***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 construct to measure the quality of life among undergraduate SQS students.

## ***Data Collection***

This study involves a primary data source, where the data collection was conducted using convenient and snowball non-probability sampling. The Google form survey are distributed through online platform, such as WhatsApp and Telegram, with help from undergraduate friends and lecturers who are currently teaching undergraduate SQS students as our referrals to distribute the questionnaire to our selected sample.

According to the School of Quantitative Sciences (SQS) official website, the total of active undergraduate students in School of Quantitative Sciences is 899 students. Therefore, the total population in this study is 899 students that included all three courses for undergraduate SQS students, which are Decision Science (451), Business Mathematics (232) and Industrial Statistics (216). Next, it is impractical to estimate the sample size if the data collection is conducted using nonprobability sampling. However, there is a time frame for the data collection, which is three months, starting from May to July 2020, and based on this time frame, the total data collection was 273 respondents.

## ***Data Analysis***

This study used exploratory factor analysis, because it is appropriate to fulfill the objective of this study, since it is often utilized to minimize the number of variables and to examine the internal consistency between variables (Williams & 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, 2007).

Next, the factors are retained based on the eigenvalue that greater than one and the cumulative percentage of variance that exceed 50%. Besides that, the scree plot also useful to identify the number of factors to be retain. Lastly, the method of extraction used are principal component analysis (PCA) and orthogonal varimax rotation, since these methods were commonly used in factor analysis.

## Results and Findings

Table 1: List of all variables

Questionnaire	Selective code
Q <sub>1</sub> My family cares for each other.	Cares for each other.
Q <sub>2</sub> My family makes time to talk.	Makes time to talk.
Q <sub>3</sub> My family members spend time going out together.	Spend time going out together.
Q <sub>4</sub> My parents will listen patiently	Listen patiently.
Q <sub>5</sub> I feel no one cares about my school work in my family	No one cares.
Q <sub>6</sub> I am satisfied with my family.	Satisfied.
Q <sub>7</sub> I have a good relationship with my family.	Good relationship.
Q <sub>8</sub> My family is united.	United.
Q <sub>9</sub> There is good communication within my family.	Good communication.
Q <sub>10</sub> I share activities with my family.	Share activities
Q <sub>11</sub> I have close friends.	Close friends.
Q <sub>12</sub> I am willing to share pleasure with classmates	Pleasure with classmates
Q <sub>13</sub> I have many other good friends	Many good friends
Q <sub>14</sub> Classmates will console me whenever I feel down.	Console whenever feeling down
Q <sub>15</sub> My classmates isolate me.	Isolate.
Q <sub>16</sub> I do not want to be friends with anyone.	Do not want to be friends.
Q <sub>17</sub> I satisfied with my friends.	Satisfied.
Q <sub>18</sub> I have friends on whom I can rely if necessary.	Can rely if necessary.
Q <sub>19</sub> People tends to have a good opinion on myself.	Good opinion.
Q <sub>20</sub> I have the support of my friends.	Support.
Q <sub>21</sub> My living environment is noisy	Environment is noisy.
Q <sub>22</sub> The air quality at my living area is at healthy level.	Air quality at healthy level.
Q <sub>23</sub> The quality of drinking water at your living area is good.	Quality of drinking water is good.
Q <sub>24</sub> I feel safe at my living area.	Safe.
Q <sub>25</sub> The traffic is always congested at my living area.	Traffic is always congested.
Q <sub>26</sub> There are a lot of vehicles passing my living area.	Lot of vehicles passing.
Q <sub>27</sub> I have access to health care facilities at my living area.	Health care facilities
Q <sub>28</sub> My country is at peace.	Peace.
Q <sub>29</sub> My country is suffering from economic issues.	Suffering from economic issues.
Q <sub>30</sub> My country is suffering from political issues.	Suffering from political issues.
Q <sub>31</sub> I seek advice from academic staff.	Seek advice from academic staff.
Q <sub>32</sub> I work hard to master difficult content.	Work hard to master difficult content.
Q <sub>33</sub> I use library resources online or on campus.	Use library resources.
Q <sub>34</sub> I work with other students on projects during class.	Work with other students on projects during class.
Q <sub>35</sub> I work with other students outside the class to prepare assignments.	Work with other students outside the class.
Q <sub>36</sub> I engage in discussions regarding my academic work using on-line discussion groups/ forums.	Discussions regarding my academic work.
Q <sub>37</sub> I use any online learning resources (other than those provided by the library) to help complete my assignments.	Complete my assignments.

Q <sub>38</sub>	I prepare two or more drafts of an assignment before handing it in.	Prepared two or more drafts of an assignment.
Q <sub>39</sub>	I read lecture notes before lectures if I have lecture notes ahead of time.	Read lecture notes.
Q <sub>40</sub>	I review lecture notes and readings before class.	Review and reading lecture notes.
Q <sub>41</sub>	I satisfied with the amount of money I have currently.	Satisfied with the current amount of money.
Q <sub>42</sub>	I financially independent from my parents.	Financially independent from my parents.
Q <sub>43</sub>	Lack of money keeps me from doing what I want to do.	Lack of money.
Q <sub>44</sub>	I have good income.	Good income.
Q <sub>45</sub>	I am able to get myself a house.	Able to get myself a house.
Q <sub>46</sub>	I feel secured from your current income.	Feel secured with current income.
Q <sub>47</sub>	I feel capable of obtaining most of the things I desired.	Capable of obtaining most of the desired things.
Q <sub>48</sub>	I have enough money to cover my basic needs.	Basic needs.
Q <sub>49</sub>	I have more money than the amount I imagined I have now.	Have more money.
Q <sub>50</sub>	I am having financial debt.	Financial debt.
Q <sub>51</sub>	I exercise multiple times every week.	Exercise multiple times every week.
Q <sub>52</sub>	I have a specific exercise program.	Specific exercise program.
Q <sub>53</sub>	I spend most of my leisure time involved in physical activities like hiking, bicycling, swimming, or playing competitive sports.	Spend most of my leisure time involved in physical activities.
Q <sub>54</sub>	I attend a meeting of an organization.	Attend a meeting of an organization.
Q <sub>55</sub>	I have attended campus activities and events (e.g. special speakers, cultural performances, sporting events, etc.).	Attended campus activities and events.
Q <sub>56</sub>	I always relaxing and socializing (watching TV, partying, playing computer and other games, etc.)	Relaxing and socializing.
Q <sub>57</sub>	I enjoy conversations with friends (club, hobby group, etc).	Enjoy conversations with friends.
Q <sub>58</sub>	I share my status with friends through phone call and letter.	Share my status with friends through phone call and letter.
Q <sub>59</sub>	I spend a pleasant time with friend.	Spend a pleasant time with friend.
Q <sub>60</sub>	I have enough energy for everyday life.	Enough energy for everyday life.

Based on Table 2, Cronbach's alpha value (0.902) exceed 0.60. Hence, this indicates that the questionnaires are reliable to proceed with the analysis. Next, Table 3 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 2: The Reliability Statistic for all items

Cronbach's alpha	N
0.902	60

Table 3: KMO and Bartlett's test for all items

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

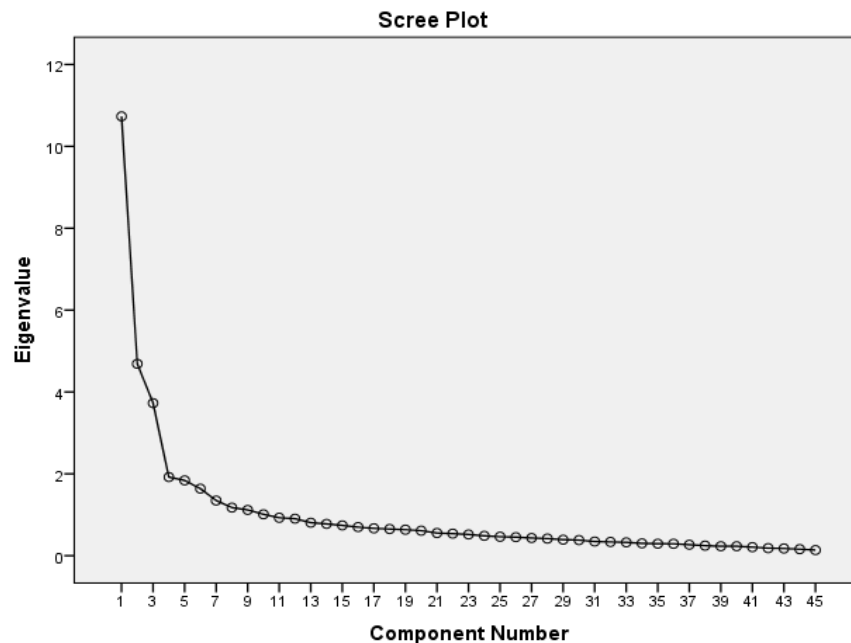
Principal component analysis (PCA) and orthogonal varimax rotation being applied in this factor analysis, since it is the most common method used by researchers. Table 4 shows that there are six factors should be retained since the eigenvalue greater than one with cumulative variance of 54.545%.

Table 4: 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 2 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 decrease, which is mean that the successive factors are consider for smaller amount of total variance explained.

Figure 2: QoL scree plot



From the Table 5, there are six factors that can be obtained from the factor rotation according to the factor loading. Awang (2018) suggested that the factor loading should be greater 0.6 to ensure the factor will be reliable for the next analysis. Hence, each item for the factor is selected based on the factor loading value with cut point of 0.6. In Factor 1 there are 9 items that comprises the factor loading range between 0.698 to 0.871. Furthermore, for Factor 2, the factor loadings are between 0.635 to 0.704 with 6 items. In addition, Factor 3 comprises of 7 items and the factor loading range between 0.609 until 0.824. Factor 4 with 3 items and factor loading range between 0.630 to 0.707. Factor 5 comprises 4 items with the range of factor loading 0.605 until 0.772. Finally, Factor 6 consist of 3 items with factor loading in range 0.634 to 0.697.

Table 5: Rotated factor pattern

Component	Items	Factor loading
1	Q1	0.871
	Q2	0.809
	Q3	0.784
	Q4	0.770
	Q6	0.756
	Q7	0.729
	Q8	0.721
	Q9	0.716
	Q10	0.698
	Q12	0.704
2	Q13	0.700
	Q14	0.690
	Q17	0.683
	Q18	0.670
	Q20	0.635
	Q31	0.824
	Q32	0.807
	Q34	0.752
	Q36	0.729
	Q37	0.728
3	Q38	0.612
	Q39	0.609
	Q44	0.707
	Q45	0.646
	Q47	0.630
	Q48	0.772
4	Q49	0.668
	Q50	0.641
	Q51	0.605
5	Q22	0.697
	Q23	0.679
	Q24	0.634
	Q25	0.634
	Q26	0.634

From 60 items, 28 items have been eliminated after factor analysis because the factor loading of the item is less than 0.6 and not reliable for this analysis. All the 32 items that remained are tested for reliability. Table 6 and Table 7 displays that the Cronbach's alpha and KMO for 32 items left with value of 0.891 and 0.876 respectively. All Cronbach's alpha for each variable and KMO 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. Lastly, the Bartlett's test also displays a significant with p-value less than 0.05.

Table 6: 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
<b>Overall</b>	<b>0.891</b>	<b>32</b>



Table 7: KMO and Bartlett's test for 28 items after factor analysis

<b>KMO Measure of Sampling Adequacy</b>	<b>0.876</b>
Bartlett's Test of Sphericity	Sig: 0.000

## Conclusion

There are six factors that contribute to the QoL for the undergraduate SQS student, which are family, friends, academic, social wellbeing, physical and financial, and environment. Next, the value of Cronbach alpha for the six factors is 0.891, which indicates the reliability to measure the internal consistency is high and reliable. Besides for the factor pattern, the KMO's value is 0.876 and the Bartlett's Test of Sphericity shows to be significant.

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