



## WHAT FACTORS MOST? IMPACT OF PROGRAMME QUALITY DIMENSIONS ON SECONDARY SCHOOL STUDENTS' SATISFACTION WITH BIOSYSTEMS TECHNOLOGY PROGRAMME IN SRI LANKA

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### **Abstract:**

In general, education quality can be conceptually determined by the evaluation of students' satisfaction. In fact, satisfying the students in programme of studies is a key element which directly effect on future students' intake to a programme or course. The purpose of present study was to determine the impact of programme quality on students' satisfaction amongst the Sri Lankan senior secondary schools students and to analyze which dimensions of programme quality contribute the most in achieving students' satisfaction. This study used quantitative method and administered a questionnaire to 410 Biosystems Technology students from senior secondary schools in the central province of Sri Lanka. The findings revealed that programme quality is an important antecedent and determinant of the students' satisfaction with their programme of study. Interestingly, the findings indicated that subject availability for electives is the critical factor that contributes the most on students' satisfaction followed by subject content in major, classroom environment and class size and also school facilities and learning resources. Thus, the findings of the present study have provided significant contribution to the body of the knowledge in programme quality and students' satisfaction and also relevant authorities in general education such as policymakers, curriculum developers, and other relevant personnel to make necessary amendments to be improve the quality of existing programme that ensures the students' satisfaction.

**Keywords:** programme quality, dimensions, secondary school students, students' satisfaction, biosystems technology

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## 1. Introduction

Biosystems Technology is a new and specific field of study introduced to the senior secondary school curriculum in Sri Lanka. This is an emerging discipline not only in Sri Lanka, even in the world and synonymous with Biosystems Engineering or Agricultural & Biological Engineering or Agriculture & Biosystems Engineering (Brassiolus, 2008). In fact, Sri Lanka is aim to transit from the lower middle income status in to the upper middle income country by the year 2020, where the country needs a competent workforce which is being adversely affected by the higher number of art graduates who are remains unemployed or underemployed. This is mainly happened due to the higher number of student enrolment to the Art stream at senior secondary stage (Advanced Level) of education. In consequence, the number of students qualified for the university admission is usually high in Art stream than others such as Commerce and Science stream. In this regard, Sedera (2010) states that the country need to do comprehensive education reform where secondary and tertiary stages would be more significant.

In year 2013, a comprehensive initiative was taken by the Sri Lankan government policy makers in order to mitigate the oversupply of art graduates to the job market by introducing Biosystems Technology programme under the Technology stream at senior secondary stage (Advanced Level) as the result of need analysis and feasibility study (Ministry of Education, 2013 & 2014). By which, Sri Lankan government is expected to reduce the number of student enrolling to Art stream up to 25% while uplift the number of students entering both Science and Technology stream up to 40% by the year 2020 (Ministry of Education, 2013 & 2014). Hence, a higher number of students' enrollment to the Biosystems Technology programme is more significant factor as above strategies are concerned.

Nevertheless, the number of students enrolled to the Biosystems Technology programme has unexpectedly dropped in the year 2015 in comparison to the preceding years 2013 and 2014 (Ministry of Education, 2015; National Institute of Education, 2015; Department of Examination, 2014). In the literatures, there could be numerous factors that contribute to such an enrolment trends of students (Sinclair, 2014; Letcher & Neves, 2012). Of which, Sinclair (2010) pointed out that the programme or course quality is of a significant factor which is always linked with the enrolment trends. He further extended his point of view that the measures of students' satisfaction have been used to assess the quality of programme. In the other words, student satisfaction has been identified to be one of the factors which affect the quality of education programme (Bailey, Bauman & Lata, 1998; Love, 1993) while it is considered as one of the key factor of determining the quality of programmes in present market (Duong, 2015). In the sense of programme quality and students' satisfaction, a numerous studies have been done empirically in the overseas literatures to investigate the students' satisfaction in different discipline where different factors were identified by the some researchers regarding the quality of the course or programme. Since Biosystems Technology is a new and an emerging discipline in Sri Lanka, scant or no studies have yet been

conducted to ascertain the student's satisfaction with Biosystems Technology. This is a clear gap in the Sri Lankan context though only few studies done in the global literature in relation to the Biosystems Technology in different context. Hence, a need arises to ascertain the students' satisfaction with the quality of Biosystems Technology programme.

In the light of aforesaid explanation, present study was aim to examine the impact of programme quality dimensions towards students' satisfaction. Moreover, this study has also paid attention to identify that which factors of programme quality dimensions have the most impact on the students' satisfaction with Biosystems Technology. On the other hands, the research question of present study is "which factor in programme quality is influenced the most on the student satisfaction?" The finding of present study is therefore initially important for the policy makers to amend the existing policies relating to the Biosystems Technology programme. Secondly, the findings would contribute to National Institute of Education and Ministry of Education in Sri Lanka those two institutions are directly responsible for ensuring the quality of programme in different ways. Thus, this paper presented the research background in order to introduce the key aspects of the existing phenomenon. The following sections will be emphasizing on literature review, research methodology, data analysis and the result of the study. The paper ends up with some necessary implications on programme quality and students satisfaction with respect to the Biosystems Technology programme as perceived by the senior secondary school students in Sri Lanka.

## **2. Literature Review**

### **2.1 Programme Quality**

Comparatively, quality is an abstract concept, which is difficult to define that what it is? In general, numerous studies made effort to define the quality in different perspectives either in customer's perspective or specification-based perspective. In education setting, the many studies being focused that the quality from the customers' perspectives (Sumaedi, 2011), in terms of customers' perceptions of the programme quality. Indeed, in education setting, quality can be further defined from the students' perspective since the students are the principal customer of the schools, colleges and also the universities (Kuo, et al., 2013). The curriculum offered to the students by any educational institutions is considered as academic programme (Farahmandian et al., 2013). In present study, the term programme quality can therefore be conceptualized as students' perceived quality towards the programme (Sumaedi, 2011) whilst numerous studies have been described the programme quality as students' subjective evaluation about the programme. Thus, those studies have shown that the programme quality is an abstract concept and is much difficult to define. In fact, Zakaria et al., (2016) focused the programme quality as evaluation from the students' perception towards the programme and identified that programme quality was influenced by several dimensions of the programme. Similarly, study conducted by Grace et al., (2012) has also been given attention to measure the perceived academic quality of the programme

where five dimensions of programme quality were considered. Tessema et al., (2012) conducted a longitudinal study and identified 11 factors as the dimensions of the quality of curriculum which delivered to the college students in U.S.A. Peng and Samah (2006) did a study on the quality of education and identified 8 factors as determinants of programme quality whilst Sinclair (2010) evaluated the students' perceived experiences on different characteristics which effect on the business degree programme in Thailand.

Indeed, on the basis of aforesaid reviews in education setting, the programme quality can be described as a multidimensional concept which is not easy to say what does it mean by? In this study, the programme quality is therefore conceptualized as students' perceived experiences about the quality of programme.

## **2.2 Students' Satisfaction**

Generally, satisfaction can be defined in different ways that based on the context of studies. In marketing setting, the term customers' satisfaction has been extensively discussed for past two decades. In education setting, customers' satisfaction referred as students' satisfaction since the students are the principal customer of the education institutions. Therefore, such institutions emphasized that students' satisfaction as key determinant of the quality of a course or a programme offered to the students by them (Kuo, et al., 2013). Conversely, students' satisfaction can be defined as students' feelings about the education programme offered by such institutions (Abidin, 2015). The understanding of the students' satisfaction is therefore more useful for the relevant personnel to revisit, redesign and redevelop their education programme in order to meet the job market demands where the quality of the programme is considered (Tessema et al., 2012). But, Elliot and Heal, (2001) argued that students' satisfaction is not a long-term attitudes earned from their perceived experiences of the education whilst Letcher and Neves, (2010) stated that students' satisfaction is a subjective evaluation of various outcomes and their experiences in education. In fact, it can be said that students' satisfaction can be altered due to its characteristics discussed here. Several studies emphasize that customer's satisfaction can be either one-dimensional (Cronin and Taylor, 1992) or multidimensional construct (Hu, et al., 2009; Sureshchandar et al., 2002).

## **2.3 Programme Quality and Students' Satisfaction**

In the sense of the impact of programme quality on students' satisfaction, numerous studies have been conducted to measure the students' satisfaction with programme of studies at different level of education in different countries of the world and also identified various predictors as key elements in determining students' satisfaction towards different programme of studies offered by different educational institutions such as schools, colleges and universities. But, many studies were mainly concentrated on the university education than the secondary school education, not only in Sri Lanka even in other countries of the world.

In fact, Zakaria et al., (2016) studied the students' satisfaction to the programme offered in a university education. It was found that the dimensions of programme quality in classroom environment, college facilities and methods of grading were the most significant predictors of the students' satisfaction. Grace et al., (2012) did a study the impact of programme quality on the students' satisfaction in a university. The results of their study indicated that the dimensions of programme quality in good teaching and standards have a positive, significant impact on students' satisfaction. It was further found that the appropriate assessment and workload do not have an influence on students' satisfaction though a relationship was shown between the programme quality in appropriate assessment and students' satisfaction.

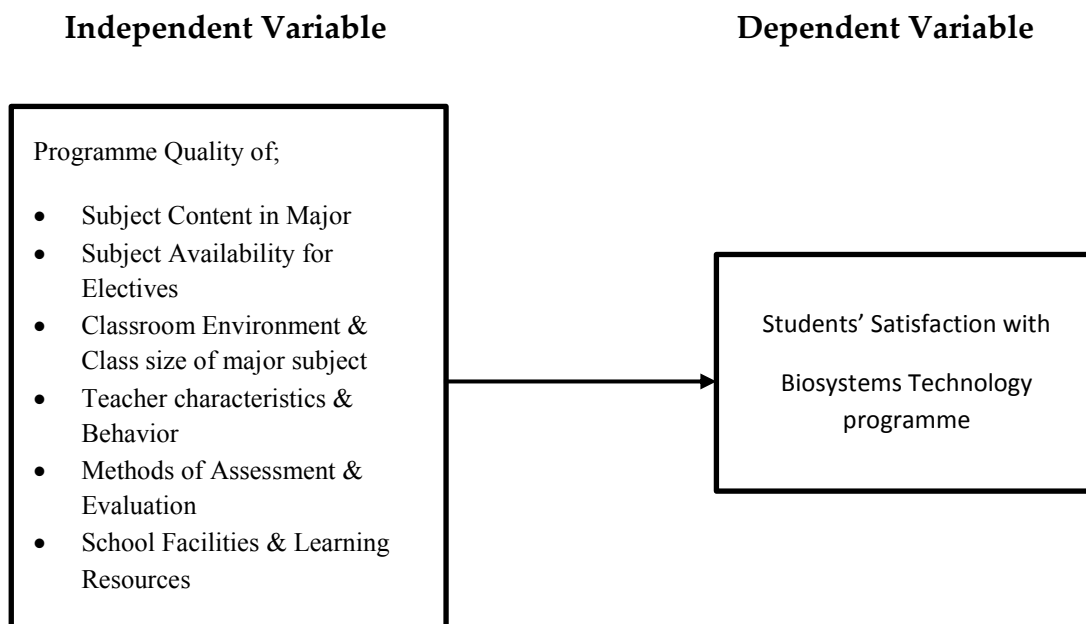
Conversely, a study conducted by Tessema et al., (2012) shows that there is a significant correlation between curriculum offered and students' satisfaction with the dimensions of curriculum quality in instructions, course content in major, variety of courses, required courses availability for major, academic advising, preparation for carrier, capstone experiences, class size of major courses, courses availability for electives and grading in major courses. Therefore, dimensions of curriculum quality highlighted here can be the antecedents in determining students' satisfaction with the curriculum.

Peng and Samah, (2006) did a study on determining the factors affecting students' satisfaction towards the quality of the education and found that course content has the strongest influence with students' satisfaction followed by instruction media, facilities and lecturers. Similarly, Sinclair (2010) found that significant variables in the study model established a direct impact on students' satisfaction with college courses are college facilities, course content, classroom characteristics, and faculty characteristics, methods of grading and learning technology. It was further found that the both characteristics in terms of instructor and faculty have shown the strongest impact to the students' satisfaction with college courses. Thus, the results of this study emphasize that the factors identified were the key predictive factors for achieving students' satisfaction with the courses offered by the colleges. Ali et al., (2011) found that there is a positive significant impact of the dimensions of distance course quality in instructor performance, course evaluation, student-instructor interaction and students' satisfaction. In fact, these factors are the key elements in explaining students' satisfaction with quality of the distance courses.

Therefore, on the basis of above empirical studies, this study has been identified the important aspects of programme quality like subject content in major, subject availability for electives, classroom environment and class size, teachers' characteristics and behavior, methods of assessment and evaluation and school facilities and learning resources which can be influenced the students' satisfaction with the Biosystems Technology programme where the experts' opinions regarding the area and context of this study were highly considered in determining what factors are the most important. In sum, the empirical studies discussed here, verified that the quality of a programme delivered to the students attributed with different factors which mainly depend on the domains and the context of the study.

### 2.3.1 Conceptual Framework of the study

The conceptual framework of the present study was developed based on the relevant past studies with variables; programme quality and students' satisfaction where the programme quality was conceptualized by six dimensions as the key determinants of the students' satisfaction, depicted in Figure 1.1. The dimensions of programme quality were extracted from the extensive literature reviews and interview with the experts in the field of education.



**Figure 1.1:** Conceptual Framework of the Impact of Programme Quality on Students' Satisfaction with Biosystems Technology programme

From above conceptual framework and reviewed literatures, the following hypothesis consisting six sub-hypotheses were developed.

- H1: The programme quality has a positive and significant impact on the students' satisfaction with Biosystems Technology programme.
  - H1a: The programme quality in subject content in major has a positive and significant impact on the students' satisfaction with Biosystems Technology programme.
  - H1b: The programme quality in subjects' availability for electives has a positive and significant impact on students' satisfaction with Biosystems Technology programme.
  - H1c: The programme quality about classroom environment and class size has a positive and significant impact on the students' satisfaction with Biosystems Technology programme.
  - H1d: The programme quality about teacher characteristics & behavior has a positive and significant impact on students' satisfaction with Biosystems Technology programme.

- H1e: The programme quality in methods of assessment & evaluation has a positive and significant impact on students' satisfaction with Biosystems Technology programme.
- H1f: The programme quality in school facilities & learning resources has a positive and significant impact on students' satisfaction with Biosystems Technology programme.

### **3. Research Methodology**

#### **3.1 Study population and Sampling**

The total population of this study was all the students those who were enrolled to the Biosystems Technology Programme at senior secondary stage (Advanced Level) of education in Sri Lanka, in the year 2013 and 2014. The study population was concentrated to the central province of Sri Lanka since it characterized with the highest student population who enrolled to Biosystems Technology programme which is about 1,679 and also it was only the province of the country representing wider ethnic diversity where the time and cost constraints were considered. The sample size was 313 minimum respondents (students) since the study population was 1679 (Sekaran and Bougie, 2010). But, in this study, sample size was deciding that the response rate might be 70 per cent. Hence, the sample size of this study was 410 Biosystems Technology students who were represented three districts in the Central Province of Sri Lanka.

The sampling methods used in this study were the stratified and simple random sampling methods since the study population of this study is symbolized with similarities and differences which lead to random sampling error (Zikmund, et al; 2010). In the other words, educational districts of the central province and the year of student enrollment for Biosystems Technology programme were taken into consideration when drawing the subjects (respondents) in the sample.

#### **3.2 Instrumentation**

This study used a questionnaire as a medium in order to obtain the data required. There are three sections in the questionnaire; section A focused on students' demographic information such as students' education district, gender, ethnicity, year of enrollment, class size. Section B covered students' perceived experiences with six dimensions of programme quality in subject content in major, classroom environment and class size, subjects' availability for electives, teacher characteristics and behavior, methods of assessment and evaluation and also school facilities and learning resources. Section C asked the students to indicate their satisfaction in Biosystems Technology programme. The items in the questionnaire except section A were measured using 5-point Likert typed scale ranging from 1 for strongly agree to 5 for strongly disagree by the level of students' agreement with given statements which represent the quality of Biosystems Technology programme. Indeed, the items in the questionnaire were adapted from various sources of existing literatures and some minor modifications were made to meet

the Sri Lanka context, since many studies did not covered the key aspects of the quality of programme related to the domain and the context of the present study.

The pilot-tested questionnaire was administered to the 410 students selected randomly from the three education districts followed by the year of student enrolment to the Biosystems Technology programme in central province of Sri Lanka. Interestingly, amongst 410 students, 325 questionnaires were received as completed questionnaires and the response rate was consequently reported as 78.85 per cent which can be considered as an adequate sample size to the present study (Sekaran and Bougie, 2010).

## 4. Data Analysis and Findings

### 4.1 Reliability Analysis

The reliability of the data was performed by the Cronbach's alpha (Bhattacharjee, 2012; Zikmund et al., 2010) and subsequently tested the validity of the data by using explanatory factor analysis (Dharmarathne, 2014). Table 4.1 indicated that the results of reliability analysis for the dimensions of programme quality in subject content in major, subject availability for electives, classroom environment & class size, teacher characteristics & behavior, methods of assessment & evaluation, school facilities & learning resources and students' satisfaction. The Cronbach's alpha for all the dimension of programme quality and students' satisfaction were ranging from 0.703 to 0.820 which exceeded the threshold value 0.7, as recommended by Cronbach, (1951). Therefore the instrument used in this study was found to be consistent (internal consistency) & deemed as reliable to measure the variables of interest. The construct validity was established since the minimum factor loading for each construct was higher than 0.4 on a single factor extracted (Hair et al., 1988).

**Table 4.1:** Summary of Reliability Analysis

| Variable & Dimensions                             | Number of Items | Cronbach's Alpha |
|---|-----------------|------------------|
| Programme quality of;                             |                 |                  |
| • subject content in major (SCM)                  | 06              | 0.718            |
| • methods of assessment & evaluation (MAE)        | 06              | 0.733            |
| • classroom environment & class size (CECS)       | 06              | 0.731            |
| • teacher characteristics & behavior (TCB)        | 07              | 0.820            |
| • subjects availability for electives (SAEM)      | 06              | 0.703            |
| • school facilities & learning resources (SFLR)   | 06              | 0.736            |
| Students' satisfaction with BST programme (SSBST) | 06              | 0.780            |

Source: Survey Data, 2016/2017

### 4.2 Descriptive Statistics and Correlation Analysis

The descriptive statistics for dimensions of programme quality and student satisfaction are depicted in Table 4.2 with correlation matrix which indicated that six dimensions of



programme quality are correlated adequately with students' satisfaction with Biosystems Technology programme.

**Table 4.2:** Summary of Descriptive Statistics and Correlation Matrix

| Construct(s) | Mean   | Std. De. (SD) | SCM    | MAE    | CECS   | TCB    | SAEM   | SFLR   | SSBST |
|--------------|--------|---------------|--------|--------|--------|--------|--------|--------|-------|
| SCM          | 3.7742 | .50633        | 1      |        |        |        |        |        |       |
| MAE          | 3.6801 | .58606        | .431** | 1      |        |        |        |        |       |
| CECS         | 3.6560 | .69259        | .379** | .427** | 1      |        |        |        |       |
| TCB          | 3.8869 | .51502        | .320** | .444** | .388** | 1      |        |        |       |
| SAEM         | 3.8729 | .58398        | .275** | .350** | .204** | .213** | 1      |        |       |
| SFLR         | 3.3339 | .59526        | .227** | .509** | .390** | .331** | .220** | 1      |       |
| SSBST        | 3.9980 | .42445        | .427** | .373** | .345** | .261** | .426** | .307** | 1     |

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

Source: Survey Data, 2016/2017

Therefore, the results from Pearson Correlation analysis; a commonly used bivariate relationship analysis method is preliminary supported the hypotheses of this study since the all dimensions of programme quality had a relationship with students' satisfaction. Indeed, the correlation matrix is further emphasized that the intercorrelation among the programme quality dimensions has positive and not exceeded than threshold value of 0.85. On the other words, outcome of this analysis have shown that there is no issue with multicollinearity.

Furthermore, from the Table 4.2, the mean score for all dimensions of programme quality met cut off value is above 3.0 which generally indicated that the students are dissatisfied with the quality of the Biosystems Technology programme. In short, the respondents of this study are alarming that they are not satisfied in quality of Biosystems Technology programme offered by the government of Sri Lanka.

### 4.3 Multiple Regression Analysis

Statistically, multiple regression analysis is an appropriate method for data analysis of the present study since the purpose of the study was to investigate the relationship simultaneously between an outcome variable and two or more explanatory variables (Hair et al., 1998) and the outcome variable is measured on a continuous scale (Hair et al., 2011). Therefore, the multiple regression analysis was performed for the data gathered and the results have depicted in Table 4.3, 4.4 and 4.5. Before running the multiple regression analysis, the assumptions of multicollinearity, normality, uncorrelated errors were initially tested and met statistically. From the Table 4.3, the R square value is 0.328 reporting that 32.8% of the variation in students' satisfaction can be explained by programme quality in subject content in major, subjects' availability for electives, classroom environment and class size, teachers' characteristics and behavior, methods of assessment and evaluation and also school facilities and learning resources. The effect size of R square (32.8%) is substantial (Cohen, 1988, 1998). This means that quality of Biosystems Technology programme is a key element in determining students' satisfaction. Furthermore, the results of Durbin Watson Statistics (Table 4.3) are 1.955

which is around 2.00. It could be found that there is no autocorrelation issue between the error terms (Chinna, K & Yuan, C.W, 2016).

**Table 4.3:** Results of Stepwise Multiple Regressions (Model Summary)

| Model | R     | R square | Adjusted R Square | Std. Error of the Estimates | Durbin-Watson |
|-------|-------|----------|-------------------|-----------------------------|---------------|
| 1     | .572a | .328     | .315              | .35129                      | 1.955         |

a. Predictors: (constant) SCM, SAEM, CECS, TCB, MAE, SFLR

b. Dependent variable: SSBST

Table 4.4 recorded that the F-value of 25.834 and it is significant at p-value of 0.001 which indicated that overall fit of the model used. On the other words, it implies that at least one of the six dimensions of programme quality; scm, saem, cece, tcb, mae and sflr can be used to describe the students' satisfaction. Chinna and Yuen, (2016) pointed out that multiple regression facilitate to determine the overall fit of the model, in terms of a large F-value or FSTAT reported by a small p-value (<0.05) as good fit which means that at least one of independent variables can describe the outcome variable.

**Table 4.4:** Results of Stepwise Multiple Regression (ANOVA)

| Model        | Sum of squares | df  | Mean square | F      | Sig.  |
|--------------|----------------|-----|-------------|--------|-------|
| 1 Regression | 19.128         | 6   | 3.188       | 25.834 | .0000 |
| Residual     | 39.242         | 318 | .123        |        |       |
| Total        | 58.371         | 324 |             |        |       |

a. Dependent variable: SBST

b. Predictors: (Constant), SCM, SAEM, CECS, TCB, MAE, SFLR

The impacts of each dimensions of programme quality on students' satisfaction are depicted in Table 4.5. Of which, the standardized beta values (beta coefficient) are the test statistics of the relationship between the independent variables and the dependent variable in terms of the relationship between the programme quality dimensions and students' satisfaction. From the output (Table 4.5) except teachers' characteristics and behavior and methods of assessment and evaluation, other variables; subject content in major, subjects' availability for electives, classroom environment and class size, and also school facilities and learning resources have a statistically significant relationship with students' satisfaction at significance values (P-values) as 0.001 (0.000). On the other words, dimensions; teachers' characteristics and behavior (beta = .014, P =.797) and methods of assessment and evaluation (beta = .049, P =.423) have not statistically significant relationship with students' satisfaction since the significance value of both dimensions were more than 0.05 where the term used as insignificant (P > 0.05). In short, based on the Table 4.5, there are four dimensions of programme quality (subject content in major, subjects' availability for electives, classroom environment and class size, and also school facilities and learning resources) that are statistically significant to the students' satisfaction at significance values of 0.001.

**Table 4.5:** Results of Stepwise Multiple Regression (coefficient <sup>a</sup>)

| Model |            | Std. Coefficient   |            |      | t     | Sig. | Collinearity |       |
|-------|------------|--------------------|------------|------|-------|------|--------------|-------|
|       |            | Unstd. Coefficient |            | Beta |       |      | Tolerance    | VIF   |
|       |            | B                  | Std. Error |      |       |      |              |       |
| 1     | (Constant) | 1.683              | .202       |      | 8.366 | .000 |              |       |
|       | SCM        | .211               | .040       | .252 | 4.720 | .000 | .743         | 1.346 |
|       | SAEM       | .209               | .036       | .287 | 5.777 | .000 | .855         | 1.170 |
|       | CECS       | .075               | .034       | .122 | 2.223 | .027 | .704         | 1.420 |
|       | TCB        | .011               | .044       | .014 | .255  | .797 | .739         | 1.353 |
|       | MAE        | .036               | .045       | .049 | .802  | .423 | .557         | 1.798 |
|       | SFLR       | .078               | 0.39       | .110 | 1.993 | .047 | .696         | 1.437 |
| 2     | (Constant) | 1.714              | 186        |      | 9.213 | .000 |              |       |
|       | SCM        | .223               | .043       | .266 | 5.224 | .000 | .813         | 1.231 |
|       | SAEM       | .216               | .035       | .297 | 6.121 | .000 | .895         | 1.117 |
|       | CECS       | .093               | .036       | .130 | 2.568 | .011 | .824         | 1.213 |
|       | SFLR       | .082               | .032       | .133 | 2.521 | .012 | .756         | 1.323 |

a. Dependent variable: SSBST  
 (Source: Survey Data, 2016/2017)

Furthermore, from Table 4.5, the significant relationship between independent variables and dependent variable are indicated as a positive relationship since the output of regression analysis reported that the sign of the each coefficient values are positive which means that increases in one variable correspond to increase in the other variable and vice versa. In short, in this case, it moves same direction based on the direction of relationship appeared as Table 4.5. In sum up, the results of multiple regression analysis (Table 4.3, 4.4 and 4.5) indicated that the model used in this study is fit and all the dimensions of programme quality except teachers' characteristics and behavior and also methods of assessment and evaluation are positively, significantly contributing to the prediction of students' satisfaction. On the other words, the results proven that the programme quality in subject content in major, subjects' availability for electives, classroom environment and class size, and also school facilities and learning resources have a positive, significant relationship with students' satisfaction though all the dimensions were correlated adequately with the students' satisfaction at correlation coefficient (r) values of more than 0.3 and significant at the values of 0.001 which are considered as sizable level of association (Cohen, 1988).

#### 4.3.1 What factors (predictors) most contribute on the students' satisfaction with Biosystems Technology programme?

The model 2 on Table 4.5 clearly exhibited that the value of R-square ( $R^2$ ) as 0.326 which means that dimensions of programme quality explain 32.6% of variance in determining students' satisfaction. Therefore, the multiple regression analysis shows that the model 2 is fit to explain the impact of programme quality on students' satisfaction. On the other words,  $R^2$  value indicated 32.6% of the variation on students' satisfaction is explained by subject content in major, subjects' availability for electives, classroom environment and class size, and also school facilities and learning resources.

Furthermore, in Table 4.5 reported that subjects' availability for electives (Beta = 0.297) is the most important predictor of students' satisfaction followed by subject content in major (Beta = .266), classroom environment and class size (Beta = .133) and school facilities and learning resources (Beta = 0.130). In fact, subjects' availability for electives makes the most contribution to explain students' satisfaction than others whilst school facilities and learning resources makes least contribution to explain students' satisfaction since it has the lowest beta value (Beta = 0.130).

#### 4.4 Summary of Hypothesis Testing

The above findings reported that subject content in major, subjects' availability for electives, classroom environment and class size, and also school facilities and learning resources have a positive, significant impact on students' satisfaction though teachers' characteristics and behavior and methods of assessment and evaluation were insignificant. In sum, the results of hypothesis testing are depicted in Table 4.6.

**Table 4.6: Summary of Hypothesis Testing**

| Hypothesis      | Description   | Results   |
|-----------------|---|-----------|
| H <sub>1a</sub> | The SCM has a positive, significant impact on SSBST.  | Supported |
| H <sub>1b</sub> | The SEAM has positive, significant impact on SSBST.   | Supported |
| H <sub>1c</sub> | The CECS has a positive, significant impact on SSBST. | Supported |
| H <sub>1d</sub> | The TCB has a positive, significant impact on SSBST.  | Rejected  |
| H <sub>1e</sub> | The MAE has a positive, significant impact on SSBST.  | Rejected  |
| H <sub>1f</sub> | The SFLR has a positive, significant impact on SSBST. | Supported |

Source: Survey Data, 2016/2017

## 5. Discussion and Conclusion

This study attempted to investigate the impact of programme quality on students' satisfaction in Biosystems Technology programme and simultaneously focused to analyze what factors the most influence on students' satisfaction.

### 5.1 Discussion

The descriptive statistics of this study is clearly indicated that the majority of respondents are dissatisfied with programme quality since the mean score of each construct towards 4.0. Furthermore, the findings of this study revealed that there a positive, significant correlation between the dimensions of programme quality and students' satisfaction. Beside to that, the findings of multiple regression analysis emphasized that students' satisfaction in Biosystems Technology programme was influenced by the programme quality in subject content in major, subjects availability for electives, classroom environment and class size, and school facilities and learning resources except methods of assessment and evaluation, and teachers' characteristics and behavior. On the other words, all dimensions of programme quality except methods of assessment and evaluation, and teachers' characteristics and behavior have positive, significant impact on students' satisfaction. Thus, the findings of this study

consistent with the previous studies (e.g. Zakaria et al., 2016; Teseems et al., 2012; Ali et al., 2011; Sinclair, 2010 and Peng & Samah, 2006). In the other hands, findings of this study is revealed that teachers' characteristics and behavior, and methods of assessment and evaluation do not have impact on students' satisfaction. This finding contradicts with the past studies of Grace et al., (2012), Ali et al., (2011) and Sinclair, (2010). In fact, with increasing the quality of above significant factors tend to uplift the students' satisfaction with programme of study. Furthermore, subject availability for electives was the most important predictor that impact on students' satisfaction with Biosystems Technology programme.

Indeed, though all dimensions of programme quality are involved in explaining the students' satisfaction, it is not meaning that all dimensions of programme quality are most important. In fact, it was evident that subject availability for electives is a critical factor of programme quality that contributes most to the students' satisfaction. Thus, the students in general education especially at the senior secondary stage (Advanced Level) are highly concerned with the elective subjects offered with Biosystems Technology programme, since it directly affects to the cut-off marks (e.g. z-score ) for the state university entrance.

The findings further revealed that the subject content in major had second highest explanatory power on students' satisfaction. This was not an incredible incident since high quality subject content in terms of competency-oriented and job market relevance are considered as backbone of the quality education programme. This finding also reflected with previous studies conducted by Teseema et al., (2012), Sinclair, (2010) and Peng & Samah, (2006). Beside to the significant impact of subject availability for electives, subject content in major on students' satisfaction, classroom environment and class size is the third important predictor which rather influences students' satisfaction. This finding was sustained with the past studies of Zakaria et al., (2016), Sinclair, (2010) and Peng & Samah (2006). Thus, this finding emphasized that the classroom environment and class size play a key role in an effective teaching learning process.

Surprisingly, the findings of present study emphasized that the school facilities and learning resources was the least important predictor that impact on students' satisfaction. But, it is contradicted to some extent with previous study of Price et al., (2003) as emphasizing that learning resource and facilities has the highest predictive power on students' satisfaction. However, this finding is indicated that the learning resources and facilities are key input in quality education programme.

Though the findings of this study revealed that programme quality in teachers' characteristics and behavior, and methods of assessment and evaluation were insignificant predictive factor of the students' satisfaction, the studies conducted by O'Driscoll (2012) and Nadiri (2011) revealed that methods of teaching and teaching staff have a positive, significant impact on students' satisfaction. In fact, the better interaction between the teachers and students, and quality teaching lead to better experience in learning which positively impact on students' satisfaction.

## 5.2 Conclusion

In this study, the findings elaborated here clearly indicated that the important of all dimensions of programme quality for assuring students' satisfaction. Indeed, two dimensions in programme quality namely methods of assessment and evaluation, and teachers' characteristics and behavior were insignificant with students' satisfaction though all dimensions in programme quality were correlated adequately with students' satisfaction. Therefore, the findings of this study contribute to the body of knowledge in terms of programme quality and students' satisfaction. In fact, with increasing the quality of programme, it tends to increase the students' satisfaction with the programme. Furthermore, the findings from this study make a better environment for the relevant authorities in education sector (e.g. National Institute of Education, Ministry of Education in Sri Lanka) to eliminate the weakness of the programme offered. In effect, with ensuring the quality of a programme, the students tend to perceive the higher satisfaction with programme of study. Finally, this study would encourage the researchers to expand the conceptual framework used in this study by exploring and identifying relevant mediating factors which could uplift the relationship exists between the quality of programme and students' satisfaction.

## 5.3 Implications

**5.3.1 Theoretical;** the findings of this study contribute to minimize the gap existed in the body of knowledge because the past studies on the impact of programme quality on students' satisfaction is very limited in the global literatures. Furthermore, the reliability analysis for programme quality measurement instrument confirmed that the measurement instrument is appropriate to assess the quality of programme. Therefore, this study helps the researchers to use this instrument for other disciplines in education context.

**5.3.2 Practical;** The findings drawn from the study help the relevant educational authorities in general education sector to aware the strengths and weaknesses of programme offered. Consequently, the relevant authorities (e.g. policy makers, curriculum developers and other relevant personnel) can take remedial measures to overcome the weaknesses identified in order to ensure the students' satisfaction. Thus, the improvement of the quality of the predictors of students' satisfaction such as programme quality in subject content in major, subject availability for electives, classroom environment and class size, and school facilities and learning resources would help to uplift the students' satisfaction with the programme of study.

## 5.4 Limitations and Recommendation for Future Studies

This study has a few limitations which make a better platform for future studies. Firstly, it is emphasized that the findings of this study is limited for central province in Sri Lanka. On the other word, the findings cannot be generalized to all the provinces in the country because the study sample was limited to 325 senior secondary students who studied Biosystems Technology in the central province in Sri Lanka. Therefore, in order

to obtain reliable data, further studies may focus on larger sample which should be drawn from one than more provinces in the country. Secondly, this study paid attention only within education industry. In sense, conclusion may not be reflected other industries. Therefore, future studies may include with other industries too. Finally, this study was focused on the impact of programme quality and students' satisfaction. Therefore, the future studies may include the impact of programme quality on the students' word-of-mouth with students' satisfaction as a mediator since the satisfied students more likely to recommend their programme for closer friends and relatives (Li, 2010).

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