



**STUDENTS' SATISFACTION TOWARDS BIOSYSTEMS  
TECHNOLOGY; DOES PROGRAMME QUALITY MATTERS?  
(EVIDENCE FROM SRI LANKAN PERSPECTIVES)**

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**Abstract:**

In the competitive education setting, with declining students' enrolment into the programme of study, the policy makers, curriculum developers and other relevant personnel should pay much attention to address the issue of attracting secondary students into job market demanded programmes. The purpose of the present study was to examine the relationship between perceived programme quality and the students' satisfaction in selected government schools in Sri Lanka. The present study applied quantitative design using 410 senior secondary students who studied Biosystems Technology. The conceptual framework has been formulated based on the comprehensive review of the past studies. Multiple regression analysis was used to test the relationships among the dimensions of programme quality and students' satisfaction as hypothesized. The finding indicated that the dimensions of programme quality have been correlated significantly with secondary students' satisfaction whilst there was a positive and significant relationship amongst the four dimensions of programme quality and students' satisfaction towards Biosystems Technology programme. Thus, the finding of current study has provided significant contribution to the existing body of knowledge in terms of offering statistically established conceptual framework and a validated measuring scale in satisfaction to the general education system. Furthermore, the implications were provided for the policy makers and relevant personnel to make remedial measures in order to quality improvement of Biosystems Technology programme.

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## 1. Introduction

Biosystems Technology is a competency-based discipline which was introduced into the Sri Lankan school curriculum in 2013. Briassoulis, (2008) emphasized that it is an *“evolving science-based field of study that integrates engineering science and design with applied biological, agricultural and environmental science”* (p.9). The political vision of the country is to transform Sri Lanka a Naval, Aviation, Commercial, Energy and Knowledge hub in Asia where the demand of the technically competent workforce is urgent need. In fact, the quality of human resources is consequently an important index as considering country is presently moving toward the knowledge economy. Hence, to achieve the above demand, the country has made comprehensive reform at the senior secondary stage (Advanced Level) of education. What it is? In the year 2013, as a remedial measure, a very good effort made by the country in order to progressively reduce the students' enrolment into art stream whilst uplifting students' enrolment into other stream of the senior secondary (Advanced Level) stage of education by introducing Biosystems Technology under the Technology stream except art, commerce and science stream. Thus, the massive number of students' enrolment into this stream is the most important index as aforesaid aim is considered.

However, in year 2015, students' enrolment into Biosystems Technology programme has dropped considerably that compare to the year 2013 and 2014 (Ministry of Education, 2015; National Institute of Education, 2015; Department of Examination, 2014).

In this regard, many empirical studies indicated that number of factors have been identified as co-criterion for such a declining trends (Sinclair, 2014; Letcher and Neves, 2010). Such studies revealed that the students' satisfaction toward academic programme is crucial factor if the students' enrolment into programme is considered (Sinclair, 2010). It was further evident that satisfaction increases the number of students' enrolment into academic institutions Serenko, (2010). On the other hand, Sinclair (2010) reported that the students' satisfaction has usually applied to evaluate the quality of academic programme. Similarly, Bailey, et al., (1998) reported that students' satisfaction effect on the academic programme quality. Doung, (2015) described students' satisfaction as a key determinant of programme quality.

In fact, different studies indicated that programme quality is a multidimensional construct (Epinoza et al., 2017; Zakaria et al., 2016; Grace et al., 2012; Tessema et al., 2012; Sinclair, 2010) Thus, it was proven that there is a relationship between the quality of academic programme and students' satisfaction. Indeed, such association might be existed between quality of programme and students' satisfaction toward Biosystems technology programme. Yet, the studies done on focusing such relationships are very limited though lesser number of studies has been conducted around the world. This

was the study gap of the present study. Therefore, it was an urgent matter to examine the extent to which students are satisfied with Biosystems Technology programme as the issue of present study is considered.

Therefore, the purpose of current study was to investigate the relationships exist between the programme quality and students' satisfaction where made effort to ascertain "does programme quality influence the students' satisfaction?". On the other word, "does programme quality matters?". Thus, finding is consequently useful for the relevant policy makers to upgrade the quality of Biosystems technology programme and also contribute for the curriculum developers and relevant personnel in order to improvement of programme quality. Accordingly, this research paper has organized under the key themes namely introduction which focus on study problem followed by the background to the study though others have kept for the section of literature review, methodology, data analysis, discussion and conclusion to be made. Finally, this paper has paid more attention to provide several implications for quality improvement of Biosystems Technology programme since higher the quality of programme, higher the students' satisfaction toward the programme offered.

## 2. Literature Review

### 2.1 Students' Satisfaction

Customer satisfaction has been broadly used term in the area of marketing literature whilst the number of empirical studies in the world has been given more attention on the topic of the satisfaction. Otherwise, in the education context, customer denoted as college or university student. Hence, customer satisfaction also referred to students' satisfaction for the educational institutions (Teerawut, 2011). Similarly, Qi et al., (2010) reported that students' satisfaction is the perception and evaluation of the services provided by such institutions whilst Gibson, (2010) emphasized that students' satisfaction is the students' feedback on an academic course or programme. Letcher and Neves (2010) highlighted that students' satisfaction is the attitude earned from the students' experiences. However, Elliot and Healy, (2001), highlighted that students' satisfaction is a short term attitude perceived from the students' experiences.

Moreover, many scholars emphasized that students' satisfaction is the attraction or positive feeling about such institutions or programmes (Abidin, 2015; Sum et al., 2010). Meanwhile, Tessema, et al., (2012) pointed out that students' satisfaction is a key determinant for educational personnel to relook on the programme offered whether it meets the students' expectations.

Espino et al., (2017) described that satisfaction with education programme is indicated to "*the extent to which the programme is seen to future work*" (p.5). Furthermore, evaluating the students' satisfaction with their institution and programme usually happened in the education context around the world where student referred as a client and satisfaction described as a measure of the perceived quality of programme.

Therefore, students' satisfaction might be difficult to define what is it? Since its dimensionality. In fact, some studies emphasized that students' satisfaction is a multidimensional in nature (Cronin and Taylor, 1992) whilst others considered as unidimensional in nature (Hu et al., 2009).

Indeed, students' satisfaction can be described as multidimensional construct which influenced by different dimensions of is self. In fact, Tessema et al., (2012) conducted a study to ascertain the students' satisfaction with curriculum offered by the education institutions whilst another study done by Letcher and Neves, (2010) focused the students' satisfaction with undergraduate business programme. A similar study conducted by Suarman et al., (2013) as the students' satisfaction with study programme. Furthermore, Sinclair (2010) carried out a study on students' satisfaction with college courses. Satisfaction with a university is another study done by Baucer, (2015).

Thus, it has observed that many studies related to the satisfaction have focused on different educational issues. The finding of such studies emphasized that more satisfied students are likely to express their perceived experiences in positive way to their closer friends and likely to continue their studies and consequently completed their programme in success (DeShields et al., 2015).

## **2.2 Perceived Quality of Programme**

Quality is a unique concept and therefore difficult to define what does mean by? However, in the education context, many scholars have paid more attention to define the quality from the students' perspectives since students are the prime customers in the educational institutions such as schools, colleges and universities (Kuo et al., 2013). Therefore, in education setting, quality can conceptualizes based on customers' perspectives as perceived quality (Sumaedi et al, 2011). The education institution such as schools and universities are considered that the students' satisfaction is one of the key determinant in measuring the quality of curriculum or programme offered by such institutions (Kuo et al., 2013) whilst the curriculum delivered to the students is referred as education programme (Farahmandian et al., 2013). Empirically, many studies described that the concept of programme quality is an abstract in nature and therefore it is not easy to define that what it is? In fact, Espinoza et al., (2017) emphasized that perceived quality depends on the actual academic programs in terms of programme's content, quality of teaching and facilities available at the institutions.

Zakaria et al., (2016) pointed out that perceived quality of programme is an evaluation of students' perception about the programme offered and emphasized that programme quality has influenced by various dimensions. Grace et al., (2012) also has focused the programme quality perceived by the students and identified five programme quality dimensions whilst 11 dimensions was identified by Tessema et al., (2012) as the dimensions of curriculum quality. Furthermore, Sinclair (2010) also paid attention on various characteristics of the programme offered by a Thailand university.

Thus, empirical studies have emphasized clearly that the perceived quality of the programme is a multidimensional in nature and therefore difficult to define; what is it?

Hence, the present study also considered the term programme quality as perceived experiences earned from the students who studied Biosystems Technology.

### **2.3. Perceived Programme Quality and Student Satisfaction**

In the sense of the relationship exist between the programme quality and students' satisfaction, many studies have been identified that numerous factors were incorporated with the quality of programme as its multidimensional nature. It is further confirmed that these factors are diversified with the area and context of the study.

In this regards, Zakaria et al., (2016) conducted a study on the factors affecting students' satisfaction with academic programme where classroom environment, lecturer (teacher), physical facilities and methods of grading were the predictor variables whilst students' satisfaction with programme of study was outcome variable. The multiple regression analysis indicated that lecturer has not significant impact on students' satisfaction though others were the significant predictors of students' satisfaction. Furthermore, methods of grading were the most influential factor to the students' satisfaction. In sum, this finding is more useful for the education management who wish to ensure the students' satisfaction with academic programmes.

Similarly, Long et al., (2014) investigated the relationship between the lecturers' competencies and students' satisfaction in Malaysian private college where 260 students were selected using stratified sampling technique. The results of regression analysis revealed that teachers' competencies in subject knowledge, clarity of presentation, interaction with the students and lecture notes were significantly and positively related to the students' satisfaction where lecturers' subject knowledge was the most significant predictor of students' satisfaction. Similarly, Swan (2001) emphasized that interaction with lecturers, active discussion with students and clarity of course design were the significant predictors of students' satisfaction. On the other words, lecturers' competencies were significantly, positively related to the students' satisfaction. In sense of empirical evidences drawn from this study, it could be established a phenomenon that with enhancing the teachers' competencies in different ways as mentioned, higher the students' satisfaction where knowledge in subject matters is the most significant predictor.

Faranhmandin et al., (2013) examined the impact of service quality on students' satisfaction where the service quality was conceptualized in five dimensions namely student advising, curriculum, teaching quality, financial assistance and tuition facilities. The results of regression analysis confirmed that there is not significant, positive impact on students' satisfaction though others were the significant predictors of students' satisfaction. Seng and Ling (2013) did a study to investigate the impact of education service quality on students' satisfaction at a higher education institution in Malaysia. The results of regression analysis indicated service quality in academic courses, instructor, students' engagement and learning resources have shown positive and significant impact on students' satisfaction except assessment. In short, service quality

has here conceptualized in five dimensions as above. Therefore, dimensions of the quality identified here can be the determinants for ensuring students' satisfaction.

Similarly, perceived programme quality conceptualized with five dimensions by Grace et al., (2012). These researchers made effort to understand the impact of programme quality on the students' satisfaction using course experience questionnaire (CEQ) distributing amongst the 210 university students in an Australian university. The findings reported that programme quality in quality teaching has a significant impact on students' satisfaction with business degree programme though appropriate assessment and workload have not direct impact on the satisfaction. But, some studies revealed that the methods of grading were significant predictor of students' satisfaction (Zakaria et al., 2016; Tessema et al., 2014). The empirical study done by Jiewanto et al., (2012) focused the impact of service quality on students' word of mouth intervened by the university students' satisfaction where the students were selected by purposive sampling method and 140 questionnaires were distributed amongst them. In fact, this study revealed that service quality in tangibility has significant impact on students' satisfaction. In sum, this study contributed to the body of knowledge about the relationship between school facilities and learning resources since tangibility represent the physical facilities, equipment, computer facilities and other facilities required for teaching learning process such as practical guides, text books. Hence, this point encourages the relevant management to higher the students' satisfaction by providing tangible facilities at optimal level.

Conversely, Tessema et al., (2012), conducted a longitudinal study on the factors affecting students' satisfaction whereby it has found that quality of instruction, course content, required courses availability for major, class size of major courses, courses availability for electives and grading in major courses were statistically correlated with students' satisfaction with curriculum. This study was also indicated that 58% of variance ( $R^2=58$ ) emphasizing above factors are important predictors if academic institutions are going to improve the students' satisfaction with their curriculum.

Teerawut (2011) studied new education system in Thailand and students' satisfaction where quality of education system conceptualized as knowledge of teacher, skills of teacher, tuition fees and curriculum. The results from structural equation modelling (SEM) reported that knowledge of teacher and curriculum have significant impact on students' satisfaction though skills of teacher and tuition fees were not significant predictors of students' satisfaction. In fact, this study gives an insight that with upgrading the knowledge of teacher and quality of the curriculum, uplifting the students' satisfaction. Malik et al., (2010) examined the impact of service quality on students' satisfaction at higher education institutions of Pakistan where 240 students were rated their perceived experiences towards the services provided by the institutions. The statistical results emphasized that service quality has a positive impact on students' satisfaction where tangibility such as lecture room, libraries, other facilities required for effective teaching and learning, class layout and class set up (e.g. classroom environment and class size) were the most influential to the students' satisfaction with

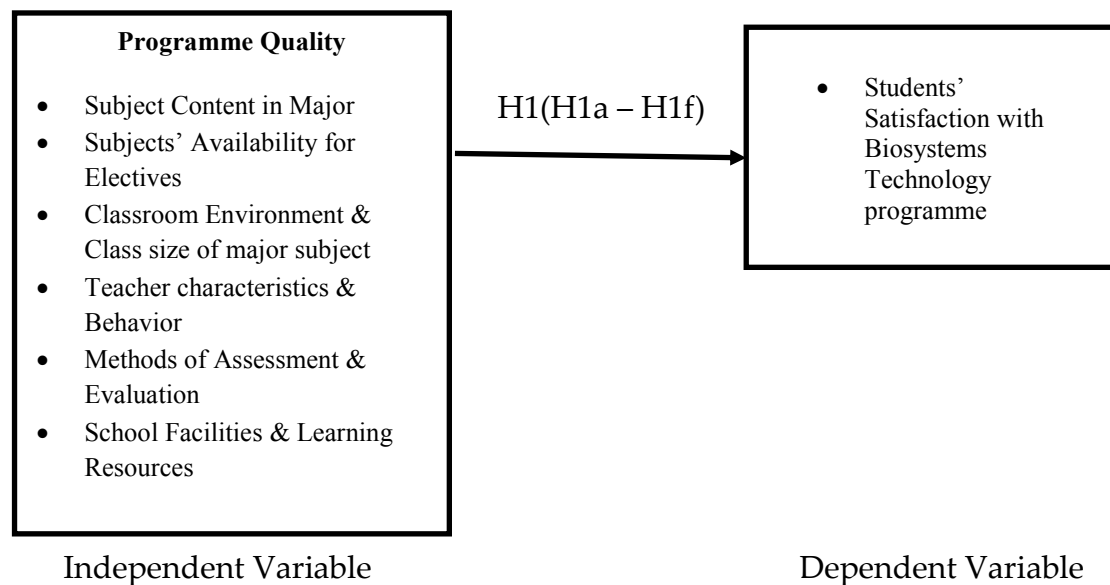
the services. Of which, this study revealed that service quality in teaching and learning environment has significant impact on students' satisfaction.

In the sense of course quality, Sinclair (2010) investigated the students' satisfaction with college course at public university, U. S. A. where electronic survey was carried out to ascertain the students' perceived experiences. In this study, course quality characterized with college facilities, classroom characteristics, course content, instructor characteristics and behavior, methods of instruction and methods of grading. The results revealed that such course characteristics have influenced the students' satisfaction with courses offered by the college. In sum, these findings are important if academic institutions are going to ensure the students' satisfaction with courses. Similarly, Shain (2007) examined the relationship between learning environment in instructor support, student interaction, personal relevance, authentic learning, active learning and students' autonomy and students' satisfaction. The sample was 917 students at Turkey University. The results from regression analysis revealed that the personnel relevance (i.e. personnel experience with course content), instructor support were the significant predictors of students' satisfaction. Therefore, these factors identified here are the key determinants in explaining students' satisfaction with quality of academic institutions.

In sum, this study has been identified the dimensions of programme quality; subject content in major, subjects' availability for electives, classroom environment and class size, teacher characteristics and behavior, methods of assessment and evaluation, and school facilities and learning resources which may have influence the students' satisfaction with Biosystems Technology programme where in deciding what quality factors should come first, the experts' opinion was greatly appreciated.

#### **2.2.4. Conceptual Framework & Hypotheses**

The conceptual framework of the present study was developed from the review of the extensive literature and past studies. Thus, the conceptual framework was formulated with two variables which consist of one variable as an independent variable with six dimensions, which were assumed that have an impact on students' satisfaction. The conceptual model of the present study is depicted in Figure 1.1 which is graphically elaborated that quality of programme influences the students' satisfaction with Biosystems Technology.



**Figure 1.1:** Conceptual Framework for the relationship between programme quality and students' satisfaction with Biosystems Technology Programme

Based on the conceptual framework, the following hypothesis and sub-hypotheses were proposed on the basis of dimensionality of programme quality (Section 2.2).

- $H_i$ : Programme quality is related to the students' satisfaction with Biosystems Technology.
- $H_{1a}$ : There is a relationship between the subject content in major dimension of programme quality and students' satisfaction.
- $H_{1b}$ : There is a relationship between the subjects' availability for electives dimension of programme quality and students' satisfaction.
- $H_{1c}$ : There is a relationship between the classroom environment and class size dimension of programme quality and students' satisfaction.
- $H_{1d}$ : There is a relationship between the teacher characteristics and behavior dimension of programme quality and students' satisfaction.
- $H_{1e}$ : There is a relationship between the assessment and evaluation dimension of programme quality and students' satisfaction.
- $H_{1f}$ : There is a relationship between the school facilities and learning resources dimension of programme quality and students' satisfaction.

### 3. Methodology

#### 3.1 Research Design

The research design adopted for the present study is rationalized in Table 3.1 (Sekaran and Bougie, 2010).



**Table 3.1:** Aspects of research design (R.D.) process adopted for present study

Aspect(s) of R.D	Aspects of R.D. in present study	Justification
Purpose of Study	Explanatory study	This study is undertaken to explain the relationships among the variables.
Type of Investigation	Correlational study	This study is not intended to establish the cause & effect relationship between the variables.
Researcher Interference	Minimal interference	This study conducted in the natural environment without disturbing to the normal class works.
Study Setting	Non-contrived	This study has done in the natural environment as a field study (not in the artificial environment).
Unit of Analysis	Individuals	The data gathered from students since problem of this study encountered with student enrollment.
Time Horizon	Cross-sectional study	The data are gathered just one.

### 3.2 Population and Sampling

The target population of present study consist of all the senior secondary (Advanced Level) students who studied Biosystems Technology in Central province of Sri Lanka. In the sense, senior secondary students who studied in the year 2013 and 2014 were therefore the study population of the present study. The stratified proportionate sampling method was used to distribute the questionnaire amongst the respondents of the study. Thus, the desired sample size for the present study was 325. However, actual study sample was 410 students since the questionnaire was administered by mail and considered the response rate (Sekeran and Bouige, 2010).

### 3.3 Research Instrument and Response Rate

The research instrument used for the present study was a closed-ended structured questionnaire. The items of the questionnaire were adapted from the past validated studies and categorized under two sections as students' perceived quality dimensions and students' satisfaction with Biosystems Technology programme except the students' demographics. Indeed, the constructs in the questionnaire have measured and operationalized using five-point Likert scales which ranging from strongly agrees (1) to strongly disagree (5). To test reliability and validity of the questionnaire, a set of 50 questionnaires were tested for reliability where the data obtained from the pilot sample analyzed by using Cronbach's Alpha. The alpha values were ranged from 0.725 to 0.900. The values were interpreted as accepted because the values were greater 0.7. The desired sample was 313. But, 410 questionnaires were distributed and 325 returned, and yielded 78.8 per cent response rate.

### 3.4 Reliability and Validity

The reliability analysis was performed by calculating Cronbach's Alfa for each construct in the scale whereby it has confirmed that the Alfa values were greater than 0.7. Thus, internal consistency of scale was established (Zikmund et al., 2010). The construct validity was confirmed since minimum factor loading value for each construct was greater than 0.4 on one factor extracted (Hair et al., 1998)

## 4. Results of Data Analysis

The data gathered from the questionnaire were analyzed using the Statistical Package for Social Science (SPSS), 21.0, where the relationships amongst the constructs of interest were analyzed using the correlation analysis, multiple regression analysis. However, before running multiple regression analysis, the all assumptions (linearity, normality, homoscedasticity and multicollinearity) were met (Chinna and Yuen, 2016).

### 4.1. Demographic Characteristics

Descriptive statistic was used to explore the students' demographic profile. The statistics related to the students (respondents) demographic characteristic is presented in Table 4.1.

**Table 4.1:** Respondents' (students') profile (N=325)

Sample demographics	Description(s)	Frequency	Percentage (%)
Education district	Kandy	167	51.4
	N'Eliya	90	27.7
	Matale	68	20.7
Gender	Male	101	31.1
	Female	224	68.9
Year of enrolment	2013	148	45.5
	2014	177	54.5

The sample of present study was represented 3 districts, Kandy, NuwaraEliya & Matale of Central Province, Sri Lanka. Out of 325 students, 167 (51%) are represented Kandy, 90 (28%) are represented Matale while 68 (21%) are represented NuwaraEliya. Of which, 224 (68.9%) were male whilst 101 (31.1%) were female. Furthermore, majority of the students are year 2014 (77 students) followed by the year 2013 students (148 students).

### 4.2. Testing of Hypotheses

The first hypothesis was “the programme quality is related to the students’ satisfaction with Biosystems Technology” consisting six sub-hypotheses (H<sub>1a</sub>-H<sub>1f</sub>). The multiple regression analysis was performed to test the sub-hypothesis (Section 2.2.4). The results of the multiple regression analysis are exhibited in Table 4.2.

**Table 4.2:** Result of multiple regression analysis with dimensions of programme quality as predictors of students’ satisfaction (N=325)

Model	Unstandardized Coefficients		Standardized Coefficients	Sig.	95% Confidence Interval for B	
	B	Std. Error	Beta		Upper Bound	Lower Bound
(Constant)	1.683	.202		.000	1.286	2.080
SCM	.211	.045	.252	.000	.123	.299
SAEM	.209	.036	.287	.000	.138	.280
1 CECS	.075	.034	.122	.027	.009	.141
TCB	.011	.044	.014	.799	-.075	.098
MAE	.036	.045	.049	.423	-.052	.124
SFLR	.078	.039	.110	.047	.001	.156

a. Dependent variable; SSBST

Source: Survey Data, 2016/2017

Table 4.2 recorded that the subject content in major (SCM) was positively related to the students' satisfaction ( $\beta = 0.25$ ,  $P < 0.05$ ) indicating that higher the level of SCM, higher the level of students' satisfaction. Subject availability for electives (SAEM) was positively related to students' satisfaction ( $\beta = 0.287$ ,  $P > 0.05$ ), indicating that the higher the level of SAEM provided by the secondary school curriculum, higher the level of students' satisfaction. Furthermore, classroom environment and class size (CECS) was positively related to students' satisfaction ( $\beta = 0.287$ ,  $P > 0.05$ ), indicating that higher the level of CECS, higher the level of students' satisfaction. Finally, school facilities and learning resources (SFLR) was positively related to students' satisfaction ( $\beta = 0.110$ ,  $P > 0.05$ ), indicating that higher the level of SFLR provided by the relevant authorities, higher the level of students' satisfaction.

On the other words, the 95% confidence interval (CI) of teacher characteristics and behavior were between (-.075, .098) and (-.052, .124) whereby the value zero of each cases was in between above CI intervals. It is further indicated that TCB and MAE were not significant predictors of SSBST, though 95% CI for SCM, SAEM, CECS, and SFLR were (.123, .299), (.138, .280), (.009, .141) and (.001, .156) whereby the value of zero was not within the above intervals. Hence, it is reconfirmed that SCM, SAEM, CECS and SFLR were significant predictors of SSBST.

Thus, the findings of the present study support the hypothesis H<sub>1a</sub>, H<sub>1b</sub>, H<sub>1c</sub> and H<sub>1f</sub>. R<sup>2</sup> value of 0.328 indicates that 32.8% of the variance in students' satisfaction is explained by the six dimensions of programme quality which indicates that there are some factors which have not been investigated in this study.

## 5. Discussion & Conclusion

The present study examined that how programme quality is related to the students' satisfaction with Biosystems Technology programme in Sri Lanka. The results of correlation analysis indicated that the dimensions of programme quality were related to the students' satisfaction which means that the better the programme quality provided by the relevant authorities, higher the students' satisfaction. However, only the four dimensions of programme quality namely subject content in major (SCM), subject availability for electives (SAEM), classroom environment and class size (CECS), and school facilities and learning resources (SFLR) were the significant predictors of students' satisfaction. On the other words, the students who studied Biosystems Technology programme have perceived above four dimensions of programme quality as more important quality aspects those needed to be fulfilled by the relevant authorities.

Indeed, amongst the six dimensions of programme quality measured, subjects' availability for electives is the strongest dimension and significant the most with students' satisfaction. In fact, the more the educational authorities such as National Institute of Education, Ministry of Education care about the dimensions identified, the students will be the more satisfied.

The finding of the present study is empirically consistent with the previous studies in terms of the programme quality in subject content in major, subjects' availability for electives, classroom environment and class size, and school facilities and learning resources is related to students' satisfaction with programme of study (Zakaria, 2016; Baucer, 2015; Mansori et al., 2014; Thapliyal, 2014; Tessema et al., 2012; Sinclair, 2010; Shain et al., 2007; Peng and Samah, 2006). In sum, the finding is further presented in Table 5.1 which would easily facilitated for the relevant personnel to provide appropriate implications for uplifting the quality of programme to be offered.

**Table 5.1:** Summary of the findings

Findings	Consistency with past studies
<ul style="list-style-type: none"> <li>With improving the programme quality in subject content in major, subject availability for electives, classroom environment &amp; class size, school facilities &amp; learning resources, the students become more satisfied.</li> </ul>	Duong,2016; Zakaria,2016; Baucer, 2015; Mansori, et al., 2014; Sinclair, 2014; Tessema et al., 2012; Sahin et al., 2007
<ul style="list-style-type: none"> <li>With enhancing the programme quality in teachers' characteristics &amp; behavior, and in methods of assessment &amp; evaluation, the <u>students' satisfaction not significantly increased.</u></li> </ul>	Zakaria, 2016; Grace et al., 2012
<ul style="list-style-type: none"> <li>Programme quality (PQ) in subjects' availability for electives is the most influential factor of student' satisfaction whilst PQ in school facilities and learning resources is the least influential factors of students' satisfaction.</li> </ul>	

### 5.1. Conclusion

In sum, this study aimed to ascertain the relationship between programme quality and students' satisfaction and to also make empirical evidences for the question; Does programme quality matters? The findings of the present study have confirmed that dimensions of programme quality are significant predictors of students' satisfaction. Furthermore, the findings statistically confirmed that subject content in major, subjects' availability for electives, classroom environment and class size, and also school facilities and learning resources of programme quality have significant relationship to the students' satisfaction in positive ways. It could be further emphasized that if programme quality in SCM, SAEM, CECS and SFLR increased, it could lead the students' satisfaction to be increased. Thus, the findings make opportunities for the relevant management in general education sector to improve the quality of programme offered.

### 5.2. Implications

The study was focused on the relationships exist amongst the programme quality and students' satisfaction with Biosystems Technology programme in Sri Lanka where relevant dimensions of programme quality; subject content in major, subject availability for electives, classroom environment and class size, teacher characteristics and behavior, methods of assessment and evaluation, and school facilities and learning resources were focused.

In fact, the present study contributes to the body of knowledge in two ways. Firstly, the findings of present study would contribute to fill the gap exist in the literature how these constructs are interrelated since scant or limited studies have been found in the literature how these constructs were interrelated significantly. Secondly, the researchers are encouraged to use this measurement instrument in their studies since reliability analysis was confirmed that the instrument used in this study is more reliable to measure the constructs of interest.

The findings were also confirmed that with improving the quality of programme in subject content in major, subjects' availability for electives, classroom environment & class size, and school facilities & learning resources, students become more satisfied. Hence, the policy makers and other relevant personnel are encouraged to revisit the quality of programme offered before the revision made in the present policies.

Further, subject availability for electives (SAEM) was the most influential predictor of students' satisfaction with programme of study whereby gives an insight how does updating of elective subject basket, impact on students' satisfaction with programme. Therefore, curriculum developers are stimulated to relook & re-decide what subjects should be? where the opinions of the subject & education experts and also the demands of the job market are very important. Although school facilities and learning resources was the least important predictor of students' satisfaction, it can't be mistreated since effective teaching learning process solely depend on such quality parameter. Therefore, education administrators and curriculum developers are also encouraged to monitor the present situation at optimal level.

### **5.3. Limitations and future studies**

In this study, there were few limitations as mentioned below. Such limitations provide an insight for the future studies. This study was confined for the Central Province of Sri Lanka due to the time constraints and non- feasibility. Therefore, findings cannot be generalized to other provinces in Sri Lanka and to other countries of the World. Firstly, it may be suggested to do same study for other provinces of Sri Lanka.

This study was focused on the education sector. Hence, the conclusion drawn from this study may not be generalized with other industries. Secondly, further research is proposed to expand such studies in the education sectors of other countries and in the other industries not only in Sri Lanka, even in the other countries of the world.

This study was limited to a cross sectional study due to the time constraints. Thirdly, further studies may include longitudinal study for same study, not only for one province, for more than a province in Sri Lanka.

## References

- Abidin, M. (2015). Higher Education Quality: Perception Differences among Internal and External Stakeholders. *International Educational Studies*, 8(12), 185-192.
- Briassoulis, D. (2008). From USAEE-TN to under the Recent Developments of Higher Education in Europe. *Proceedings of the 1<sup>st</sup>ERABEE Workshop on Definition of the Emerging Biosystems Engineering Discipline in Europe*, (pp. 5-12). Madrid. 3-4 April 2008.
- Baucer, K.V. (2015). Measuring student Satisfaction in the Andrew University School of Business, Honors Thesis Paper, 104.
- Chinna, K, & Yuen, C.W. (2016). *Statistical Analysis using SPSS (3<sup>rd</sup> Ed.)*, Pearson Malaysian Sdn Bhd. Cohen, Jack. (1988). *Statistical power analysis for the behavior sciences*: Routledge.
- Cronin, J.J., & Taylor, S. A. (1992). Measuring service quality: a re-examination and extension. *Journal of Marketing*, 56(3), 55-68.
- DeShields, O.W., Kara, A., & Kaynak, E. (2005). Determinants of business student satisfaction and retention in higher education: Applying Herzberg's two-factor theory. *International Journal of Educational Management*, 19(2), 128-139.
- Dharmaratne, G.D.I.K. (2014). *An Empirical Investigation on the Internet Banking Service Quality and Its Impact on Customer Satisfaction and Loyalty: Special reference to the Sri Lankan Banking Sector*. Management and Science University, Malaysia.
- Duong, Minh-Quang. (2015). The Factors Influencing Student Satisfaction in Vietnamese Higher Education. *International Research in Education*, 4.1, 27-38.
- Elliot, K.M., & Healy M.A. (2001). Key factors influencing student satisfaction related to recruitment and retention. *Journal of Marketing for Higher Education*, 10, 1-11.
- Espinoza, O., Gonzalez, L.E., McGinn, N., Castillo, D., and Sandoval, L. (2017). Factors that affect post-graduation satisfaction of Chilean University Students. *Journal of Studies in higher education*, 1-16.
- Farahmandian, S., Minavand, H., & Afshardost, M., (2013). Percived service quality and student satisfaction in higher education, *ISOR Journal of Business and Management*, 12(4), 65-64.
- Gibson, A., (2010). Measuring business student satisfaction: a review and summary of the major predictors", *Journal of Higher Education Policy and Management*, 32(3), 251-259
- Grace, Debra, Weaven, Scott, Bodey, Kelli, Ross, Mitchell, & Keith. (2012). Putting student evaluations into perspective: The Course Experience Quality and Satisfaction Model (CEQS), *Studies in Educational Evaluation*, 1-28
- Hair, Joe F., Ringle, Christain, M., & Sarstedt, Marko. (2011). PLS\_SEM: Indeed, a silver bullet. *The Journal of Marketing Theory and Practice*, 19(2), 139-152.
- Hair, J.F., Anderson, R.E., Tatham, R.L., & Black, W.C. (1998). *Multivariate Data Analysis* (5 Ed.). New Jersey: Prentice Hall.

- Hu, H.H., Jay, K., & Thanika, D.J. (2009). Relationship and impact of service quality, perceived value, customer satisfaction, and image: an empirical study. *The Service Industries Journal*, 29(2), 111-125.
- Kuo, Y.C., Walker, A.E., Belland, B.R., & Schroder, K.E. (2013). A predictive study of student satisfaction in online education programs. *The International Review of Research in Open and Distributed Learning*, 14(1), 16-39.
- Letcher, D.W., & Neves, J.S. (2010). Determinants of undergraduate business student satisfaction. *Research in Higher Education Journal*, 6, 1.
- Li, (2012). Exploring the Relationships among Service Quality, Customer Loyalty and Word-Of-Mouth for Private Higher Education in Taiwan. *Asian Pacific Management Review*, 18(4), 375-389.
- Malik, et al., (2011), A study on Student Satisfaction in Pakistani Universities: The Case of Bahauddin Zakariya University, Pakistan. *Asian Social Science*, 7(7), 209-219.
- Mansori, S., Vaz, A., & Ismail, Z.M.M. (2014). Service Quality, Satisfaction and Student Loyalty in Malaysian Private Education. *Asian Social Science*, 10(7), 57-66.
- Ministry of Education Sri Lanka. (2013, January). *Education First Sri Lanka*. Battaramulla: Ministry of Education.
- Ministry of Education Sri Lanka. (2013). *Introduction of Technology Stream for General Certificate of Education (Advanced Level)*. Battaramulla: Ministry of Education.
- Ministry of Education Sri Lanka. (2014). *Implementation of the Technology Stream in Schools of Sri Lanka and Time Bound Action Plan for Technology Stream Rollout*, Battaramulla: Ministry of Education.
- Nadiri, H. (2011). Strategic Issue in Higher Education Marketing: How University Students' Perceive Higher Education Service. *Asian Journal of Quality*. 7(2), 125-140.
- O'Driscoll, F. (2012). What matters most: An exploratory multivariate study of satisfaction among first year hotel/hospitality management students. *Quality Assurance in Education*, 20(3), 237-258.
- Peng, P.J., & Samah, A. (2006). Measuring students' satisfaction for quality education in e-learning university. *UNITAR E Journal*, 2(1), 11-21.
- Price, I., Matzdorf, K., Smith, L., & Agahi, H. (2003). The impact of facilities on student choice of university. *Facilities*, 21(10), 212-222.
- Samaedui, S., Bukit, I.G.M.Y., Metasari, (2011). The Effect of Students' Perceived Service Quality and Perceived Price on Students' Satisfaction, *Management Science and Engineering*, 9(1), 88 – 97.
- Sekaran, U. & Bougie, R. (2010). *Research Methods for Business: A Skill Building Approach (5<sup>th</sup> Ed.)*. New Delhi: Wiley India (P.) Ltd.
- Seng, E.L.K., & Ling, T.P. (2013). A Statistical Analysis of Education Service Dimensions on Business School Students' Satisfaction. *International Education Studies*, 6(8), 136-146.

- Serenko, A. (2010). Students' satisfaction with Canadian Music programme: the application of the American Customer Satisfaction Model in higher education. *Journal of Assessment & Evaluation*, p. 1-19
- Sinclair, J.K. (2014). An Empirical Investigation of Student Satisfaction with College Courses. *Research in Higher Education Journal*, 22(1), 1-21.
- Suarman, et al., (2013). The Quality of Teaching and Learning towards the satisfaction among the University students. *Journal of Asian Social Science*, 9(12), 252- 260.
- Sum Vichet, McCaskey J. Stephen and Kyeyune Catherine (2010), a survey research of satisfaction levels of graduate students enrolled in a nationally ranked top-10 program at a mid-western university. *Research in Higher Education Journal*, 1-17.
- Sureshchandar, G.S., Chandrasekharan, R., & Anantharaman, R.N. (2002). The relationship between service quality and customer satisfaction: a factor specific approach. *Journal of Service Marketing*, 16(4), 363-379.
- Teerawut, T. (2011). Undergraduate Student Satisfaction towards the new Education System in Thailand. *International Journal of Social Sciences and Humanity Studies*, 3(2), 443-455.
- Tessema, M.T., Ready, K., & Yu, W. (2012). Factors affecting college students' satisfaction with major curriculum: Evidence from nine years of data. *International Journal of Humanities and Social Science*, 2(2), 34-44.
- Zakaria, N., Umar, R., Deraman, W.H.A.W., & Mutalib, S.S.S.A. (2016). Regression Analysis on Factors Influencing Students' Satisfaction towards Programme Courses. *Indian Journal of Science and Technology*, 9(17), 1-5.
- Zikmund, W.G., Babin, B.J., Carr, J.C., & Griffin, M., (2010). *Research Methods (8<sup>th</sup> Ed.)*. Available at <https://drmramzan.files.wordpress.com/.../business-research-method-zikmund-el-al-8th-ed-copy.pdf>



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