# Empirical Study on the Student

# Satisfaction Index in Higher Education

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**Abstract**

Students are direct receivers and participators for the higher education service, and their study activities would influence their perceptions and satisfactions to the educational quality. Through studying on the effects of students' activities to their satisfactions, in this article, we will establish the college student satisfaction model according to the theoretical frames of ASCI and ECSI, and the empirical research shows that the model possesses strong applicability.

**Keywords:** Higher education, Customer Satisfaction Index (CSI), Student satisfaction index

Since 1990s, with the adjustment and international development of China higher education structure, colleges are facing more and more challenges because of increasingly intense competition. Various colleges adopt various evaluation measures to prove their own education qualities and look for spaces in which they can continually be improved one after another. As participators in the process of higher education service, students have the most direct perceptions to the quality of education service. Therefore, the student satisfaction index is the important evaluation index for various college education evaluation and performance evaluation.

## 1. The development of customer satisfaction evaluation

The customer satisfaction is a sort of evaluation coming from customers, and it can not be observed directly. The evaluation to customer satisfaction usually adopts the SCSI model of Sweden, the ACSI model of US and the ECSI model of Europe at present. CSI is an evaluation system based on customer and it measure the quality of product and service according to customers' consumption experiences, and it can be used to evaluate the performances of organization, industry, department and national economy. The CSI index on organized layer embodies the total evaluation that the market (customer) which it serves to the purchase and consumption, which includes the actual use situation of product and the expectation of product, and it is the more comprehensive and more basic evaluation index at past, at present and in future for the organization.

It must consider the influence of industrial structure to the satisfaction when using CSI to evaluate the customer satisfaction (Fornell, 1996, p.7-18), and the explanations of annotation and route for some concrete concepts must be adjusted necessarily. For example, the CSI of public sector (US, 2001) took out the variable of perception value in the former ACSI model and added three structured variables such as process, information and customer service to reflect different characters of public sector other than private sector. The higher education is the disposable service which has long period, and its customers (students) have main function in the implementation of higher education service. Therefore, the evaluation of student satisfaction can not simply apply mechanically present CSI model, and foreign and domestic scholars have carried through some groping researches. Anne M. D. (2001) adopted the comparative research method to respectively analyze various student satisfaction indexes in Babson College and other five colleges with different types. Bruno Chiandotto et al (2004) applied ECSI to implement quality evaluation to the college education process through investigating college students' satisfaction to those college students in one year after graduation. China scholars had also explored the student satisfaction evaluation, and Liuwu and Yangxue (2006) put forward to add the quality factor in the student satisfaction index model as viewed from adding the opening of the model. Ma, Wanmin (2007) considered the analysis of student satisfaction from the higher education service process.

From above researches to the student satisfaction evaluation, whether for the improvement to the present CSI model or for the empirical study to the direct application, scholars are basically to annotate the model variables in the mature CSI frame and can not consider the influences of student individual activity to the education quality perception and the student satisfaction. Furthermore, the understanding to the connotation of higher education student perception value is limited in the balance between price investment and quality for the product and service in

the industry or general service industry, and ignores students' influences of non-price investment in the long-term study process. Based on the analysis to foreign and domestic research results to the student satisfaction, we think the differences of student actively influence their perceptions to the college education quality, influence their estimations to the perception value and further influence their satisfactions, and we put forward the new college student satisfaction index model, and empirically study on the model taking the junior students of certain college as the investigation objectives.

## 2. The student satisfaction index model

The college student satisfaction index model is seen in Figure 1. The model adopts the core concept and frame of ECSI, which includes college reputation, student expectation, perception quality, perception value, student satisfaction, and student loyalty. Comprehensively considering the key factor to influencing the implementation of higher education service, the model added the variable of student activity and its relative route to measure the influences of students' subjective activities to perception quality, perception value and student satisfaction. Furthermore, in this article, we also develop the connotation of perception value in the domain of higher education.

*2.1 Student activity*

In the ACSI model and ECSI model, the embedded hypothesis in the routes such as customer expectation→ perception quality, customer expectation→ perception value and customer expectation→ customer satisfaction is that the customer expectation influences customers' perceptions to the qualities of product and service, and the degree of customer expectation influences customers' value judgments to the product and service and accordingly influences customer satisfaction. The premise of this hypothesis is the qualities of the product and service in the manufacturing and general service industry are decided by providers (enterprises), and the customers are only consumers who passively accept product and service. But in the implementation process of higher education, students are not only consumers to accept the higher education service, but they are the cooperative producers of education implementation (Guolla, 1999). Students' study activity influences their perceptions to the quality of higher education service, and the education practices show that students' learn desires are higher, the questions to the teacher are more, and the requests to the education are higher. In the study process, the different endeavor degrees that students pay determine different student results, which can explain why classmates' study grades are different whey they accept same education service. Lesley Ledden (2007) studied on the relationship between student individual value and perception value and proved that the student individual behavior mode directly influenced the perception value. And Clara Cardone Riportella's research (2001) showed that students' devoted time and energy largely influenced the satisfaction to the higher education.

In this article, we take the student activity as the attributive variable to influence students' perception quality, perception value and satisfaction, and in the model, we design three routes such as student activity→ perception quality, student activity→ perception value and student activity→ student satisfaction. The evaluation adopts three observation variables such as study objective, study endeavor degree and self-management degree which can reflect students' activities.

*2.2 Perception quality*

The perception to the quality of higher education is students' judgments to education service offered by the college. Hill et al (2003) thought that two factors that influenced students' perceptions to the quality of higher education were the teacher's quality and the quality of the student support system (including schoolmate, family, college service and the environment). But the concept of quality management thinks that the organization should "take customer as the focus of attention". Therefore, in this article, based on the total quality evaluation, the customization evaluation and the reliability evaluation to ACSI, the measurement to the perception quality adds the perception measurements to the teacher quality and the sufficiency and convenient use to the education establishments.

*2.3 Perception value*

The perception value is the balance between customers' perception obtainment and perception payout. To the industrial product and general service, customers' payouts are mainly embodied as price, and ACSI uses two indexes such as the quality relative to price and the price relative to quality. In the accepting process to higher education service, students' payouts are not only money, but a great lot time, endeavors and other non-price costs to realize the study objective (i.e. the result of higher education service), and the non-price costs far exceeds the price costs. At present, the charge standard of China higher education is constituted by the country and the differences among colleges and areas are less, and the price factor is not sensitive to the perception value. In this article, we use two indexes including the quality that students spend their individual time, endeavor and intelligence and the time, endeavor and intelligence relative to the quality as the observation variables of perception value.

## 3. Empirical analysis

### 3.1 The collection sample and data

In this article, we select the junior students of grade 2004 in certain college to implement investigation. The quantity of the questionnaire is 200, and the callback quantity of the effective questionnaire is 168, and the effective rate is 84%. The sexual ratio of the data sample is 30.95% of schoolgirl and 69.05% schoolboy. The proportion of student from country is 54.76%, and the proportion of student from city is 45.24%. The proportion of student with middle and high family earning is 4.76%, the proportion of student with middle family earning is 55.35%, and the proportion of student with low family earning is 39.89%. The proportion of student whose parents' educational levels are above undergraduate course is 12.55%, the proportion of student whose parents' educational levels are specialized course is 20.83%, and the proportion of student whose parents' educational levels are below specialized course is 66.67%.

### 3.2 The design of questionnaire

The contents of the questionnaire include 21 observation variables, 5 population variables and 26 corresponding questions. Except for college reputation, other potential variables are measured by mutiple observation variables which reflect subjective perception. The scale table adopts the Likert 10 grades scales, and the college reputation, student expectation, student satisfaction, student loyalty and other potential variables use some mature scale tales in the ACSI model and the ECSI model.

### 3.3 The analysis methods

In this article, we adopt VisualPLS1.04 to implement AVE analysis and model parameter estimation for the measurement data.

### 3.4 The analysis of result

3.4.1 The Reliability and AVE analysis for the data

The reliability and AVE of the investigated data are seen in Table 1.

The reliability means the coherence, stability and dependability of the questionnaire result. According to the similar measurement experience in psychology, the Cronbach Alpha coefficient must achieve above 0.7. The values of potential variable Cronbach Alpha are among 0.750-0.875, and they are above 0.70, which indicates that the measurements to various potential variables present good inner coherence and the index reliability can be accepted.

Effectiveness is the index whether the observation variable in the questionnaire can better reflect the potential variable. The AVE of potential variable denotes the variance percentage that certain potential variable can explain the observation variable. The value of AVE is requested to exceed 0.5 usually. From Table 1, the AVE values of various potential variables in the model are among 0.591-0.837, and they are above 0.5, which indicates the explanation of measurement index exceeds the error variance, and the measurements to various potential variables have enough clustering effectiveness.

The composite reliability represents the total error of the observation variable belonging to certain potential variable, and it is used to judge the inner coherence of the measurement model, and the ideal value should exceed 0.6. The composite reliability values of total 7 potential variables in Table 1 are among 0.858-1.000, which shows the inner coherence of the measurement model is higher.

3.4.2 The standard parameter estimation of factor load

The factor load standard parameter estimation result of the model is seen in Table 2. The boldfaces in the table are the load coefficient of the measurement variables, and they reflect the relative degree between structured variable and measurement variable and the relative importance of measurement variable in the structured variable.

According to general rule, when the sample quantity exceeds or equals to 50, it is thought notable that the factor load coefficient exceeds 0.3, and it is thought important that the factor load exceeds 0.4, and it is thought very important that the factor load exceeds 0.5. The load coefficient range of the model observation variable is in 0.65-1.00, which far exceeds the critical point.

3.4.3 Parameter estimation and result analysis for the model

The route coefficients among various structured variables in the model are seen in Table 3.

The data in the Table 3 show that the college reputation directly influences student expectation, student satisfaction and student loyalty, and the route coefficient of college reputation→ student expectation is 0.556, which reflects that students' expectations to the quality of higher education are mainly decided by the college reputation and that accords with the character of disposable consumption of higher education.

The added variable in the model, the student activity is positive correlative with the perception quality and perception value, which accords with the basic hypothesis. The route coefficient between student activity and student satisfaction closes to 0, which can not prove the pertinence between both. And the route coefficients of student activity to the perception quality and perception value respectively achieve 0.330 and 0.286, and the values of T are respectively 3.96 and 3.50, which indicates that the student activity has notable direct influence to the quality perception and value perception of higher education, and its indirect influence to student satisfaction achieves 0.383, therefore, the model still hold the route from student activity to student satisfaction.

The route coefficients of college reputation, perception quality and perception value to student satisfaction are respectively 0.126, 0.680 and 0.169, and the direct effect of perception quality to student satisfaction is most, which indicates that the education quality of the college is the main factor to decide student satisfaction. To enhance student satisfaction, the colleges should first enhance their own education qualities.

## 4. Conclusions

Based on the analysis to the influencing factors for the implementation of higher education, this article improves the existing successful CSI model, puts forward the student satisfaction index model in higher education. The empirical research shows that the new variable, student activity, has important influence to the student perception to the education quality and the perception value. China higher education gives priority to public education, which is more restricted by the government and has certain monopolization. The measurement to the perception value in the article is just based on the understanding to this special position of China higher education, and with the improvement of higher education reform, the price factor must be the important balance facto for perception value. Therefore, the connotation and evaluation of perception value in higher education is the direction that we should study in future.

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Table 1. Reliability and AVE of questionnaires

| Reliability and AVE | | | |
|---|---|---|---|
| Construct | Composite Reliability | AVE | Cronbach Alpha |
| College Reputation | 1.000000 | 1.000000 | |
| Student Expectation | 0.858943 | 0.671383 | 0.750675 |
| Student Activity | 0.903822 | 0.701624 | 0.857514 |
| Perception Quality | 0.896198 | 0.591128 | 0.849901 |
| Perception Value | 0.933018 | 0.874448 | 0.856036 |
| Student Satisfaction | 0.914364 | 0.780866 | 0.856015 |
| Student Loyalty | 0.911356 | 0.837148 | 0.804974 |

Table 2. Correlative coefficients between observation variables and structured variables

| | **Factor Structure Matrix of Loadings and Cross-Loadings** | | | | | | |
|---|---|---|---|---|---|---|---|
| Scale Items | College Reputation | Student Expectation | Student Activity | Perception Quality | Perception Value | Student Satisfaction | Student Loyalty |
| 1 | **1.0000** | 0.5559 | 0.3906 | 0.4576 | 0.3979 | 0.4572 | 0.4539 |
| 2 | 0.5061 | **0.8891** | 0.3769 | 0.4436 | 0.3360 | 0.4026 | 0.3445 |
| 3 | 0.4794 | **0.8317** | 0.3355 | 0.2885 | 0.2387 | 0.2542 | 0.2539 |
| 4 | 0.3764 | **0.7294** | 0.3180 | 0.4498 | 0.3224 | 0.3028 | 0.1838 |
| 5 | 0.2186 | 0.2945 | **0.8247** | 0.3423 | 0.4405 | 0.2605 | 0.2289 |
| 6 | 0.2822 | 0.3445 | **0.8178** | 0.4365 | 0.4427 | 0.3165 | 0.3450 |
| 7 | 0.3796 | 0.3481 | **0.8805** | 0.4155 | 0.4511 | 0.3620 | 0.3204 |
| 8 | 0.4167 | 0.4200 | **0.8260** | 0.3972 | 0.4415 | 0.3316 | 0.3458 |
| 9 | 0.4377 | 0.3437 | 0.3836 | **0.7890** | 0.5195 | 0.7155 | 0.5238 |
| 10 | 0.3430 | 0.4157 | 0.3420 | **0.7927** | 0.5447 | 0.6072 | 0.4268 |
| 11 | 0.2775 | 0.3975 | 0.3297 | **0.7621** | 0.4360 | 0.5726 | 0.3944 |
| 12 | 0.3665 | 0.3232 | 0.3077 | **0.8287** | 0.4644 | 0.6850 | 0.4436 |
| 13 | 0.3235 | 0.4065 | 0.4162 | **0.7708** | 0.4813 | 0.6008 | 0.4185 |
| 14 | 0.3501 | 0.3673 | 0.4202 | **0.6589** | 0.5426 | 0.4757 | 0.3573 |
| 15 | 0.3715 | 0.3519 | 0.5125 | 0.6146 | **0.9395** | 0.5990 | 0.4570 |
| 16 | 0.3728 | 0.3392 | 0.4777 | 0.5990 | **0.9307** | 0.5428 | 0.4927 |
| 17 | 0.4390 | 0.4332 | 0.3389 | 0.7626 | 0.5877 | **0.9200** | 0.6063 |
| 18 | 0.4014 | 0.3441 | 0.4187 | 0.6970 | 0.5993 | **0.8844** | 0.6303 |
| 19 | 0.3684 | 0.2691 | 0.2453 | 0.6490 | 0.4222 | **0.8450** | 0.5537 |
| 20 | 0.4068 | 0.2896 | 0.3085 | 0.4843 | 0.4691 | 0.6278 | **0.9165** |
| 21 | 0.4240 | 0.3032 | 0.3742 | 0.5396 | 0.4588 | 0.6095 | **0.9134** |

Table 3. Estimation table of model parameters

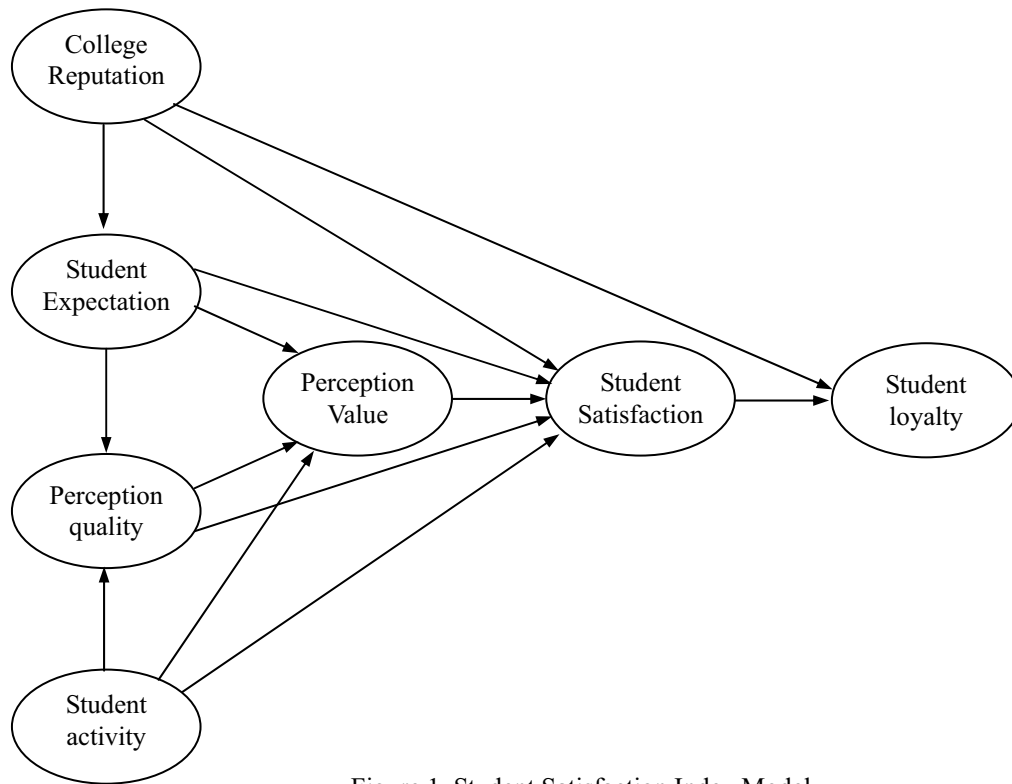| Route | Standard regressive coefficient | Value of T |
|---|---|---|
| College Reputation-> Student Expectation | 0.5560 | 8.3559 |
| College Reputation-> Student Satisfaction | 0.1260 | 2.1688 |
| College Reputation-> Student Loyalty | 0.1830 | 2.7109 |
| Student Expectation-> Perception Quality | 0.3490 | 3.8101 |
| Student Expectation-> Perception Value | -0.0010 | -0.0217 |
| Student Expectation-> Student Satisfaction | -0.0380 | -0.9161 |
| Student Activity-> Perception Quality | 0.3300 | 3.9679 |
| Student Activity-> Perception Value | 0.2860 | 3.5084 |
| Student Activity-> Student Satisfaction | -0.0650 | -1.4299 |
| Perception Quality-> Perception Value | 0.5140 | 8.8203 |
| Perception Quality-> Student Satisfaction | 0.6800 | 9.2804 |
| Perception Value-> Student Satisfaction | 0.1690 | 2.3678 |
| Student Satisfaction-> Student Loyalty | 0.5930 | 11.4069 |

Figure 1. Student Satisfaction Index Model