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# Implementation of student satisfaction index model in higher education institutions

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## Abstract

The increasing numbers of new Higher Education Institutions (HEIs) have resulted in a growing competition for attracting and retaining best students. This study aims to develop and test a Student Satisfaction Index (SSI) model for the HEIs. The SSI model is developed to measure the satisfaction of students from different aspects, such as image of the university, expectations, perceived quality, perceived value, and loyalty. The SSI model, tested in a private university, was estimated using Partial Least Squares method. The results provide valuable strategic information for HEIs manager and researchers about the affecting factors on student satisfaction and loyalty.

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*Keywords:* Student satisfaction index model, higher education, partial least squares;

## 1. Introduction

The concept of student satisfaction and loyalty have attracted much attention in recent years and become one of the major goals of all educational institutions. Satisfaction could be defined as a user's post-purchase evaluation of a product or service. A key motivation for the growing emphasis on student satisfaction is that higher student satisfaction can lead to a stronger competitive position resulting in attracting new students and maintaining the existing ones. Student satisfaction is also generally assumed to be a significant determinant of positive word-of-mouth, retention and loyalty. The satisfaction and loyalty of the students strongly depends on the efforts regarding the quality of the services provided. Therefore HEIs should listen to and satisfy their students.

This study aims to develop and test a Student Satisfaction Index (SSI) model for the HEIs. The SSI model which is adopted from European Customer Satisfaction Index (ECSI) is developed to measure the satisfaction of students from different aspects, such as brand image of the university, expectations, perceived quality, perceived value, overall satisfaction and loyalty degree of students. The Structural Equation Model of the SSI was estimated using Partial Least Squares (PLS) method.

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## 2. Literature Review and The Proposed Model

In recent years, education sector including HEIs is expanding rapidly all over the world. Since the early 1980s, the number of Turkish HEIs has also increased dramatically. In 1980s, there were less than 30 state-owned universities, today there are 165 universities, of which 62 are privately held universities.

HEIs represent the characteristics of pure service industry and therefore they have to spend greater efforts on meeting the needs and expectations of their students. Furthermore, intense national and international competition in today's competitive educational market forces HEIs to adopt a market orientation strategy to differentiate their products (i.e. academic and administrative services) from those of their competitors by delivering superior and student oriented services. In the future, it is expected that this competition will become even more intense with new HEIs and global approaches on education programs.

Definition of the customers is critical for the HEIs. Kanji and Tambi classify the customers of HEIs as the students, the employees, the employers, the public sector, and the industry and wider community. According to Hill (1995), with some controversy, students can be seen as the primary customers of HEIs.

Both in state and private universities, students are subject to pay certain amount of tuition fees for the educational services provided. Introduction of tuition fees may also change "students' position and behavior to the "consumer", and they expect value for money as other sectors' consumers. Having more influence and greater awareness as consumers, students become more interactive and selective for the variety and quality of the services. Therefore universities must understand and meet the expectations and needs of their customers, i.e. students.

The original interest in satisfaction measurement research was on customer's experience with a product episode or service encounter. More recent studies have focused on cumulative satisfaction. Cumulative satisfaction defines satisfaction as customer's overall experience to date with a product or service provider. The SSI model used for this study is built upon a cumulative view of satisfaction.

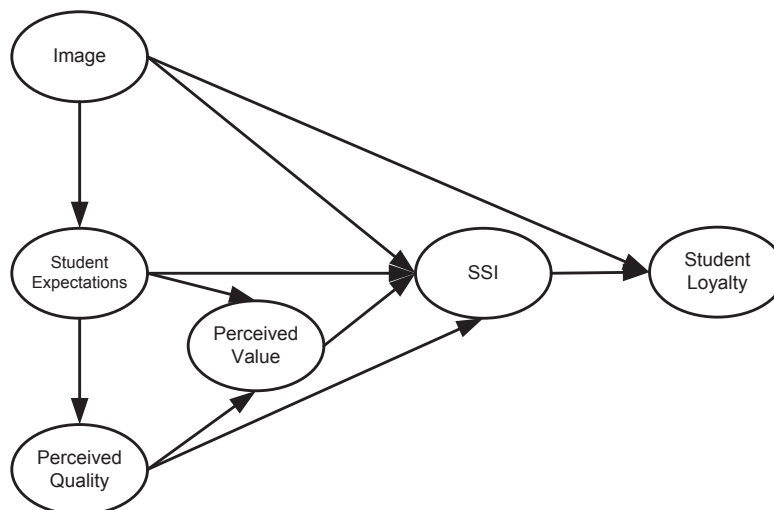


Figure 1: The proposed SSI Model

The structure of European Customer Satisfaction Index (ECSI) model constitutes the framework for students satisfaction index (SSI) model studied in this paper. The SSI model is a structural model based on the assumptions that satisfaction is caused by some factors such as perceived quality, perceived value, expectations of students, and image of a firm. Each factor in the model is a latent construct which is operationalized by multiple indicators. In Figure 1, the hypothesized relationships between student satisfaction and other latent constructs are depicted with lines.

The image construct evaluates the underlying image of the university. Image refers to the brand name and the kind of associations students get from the products or services. In this study, image is defined as a result of being

reliable (IM1), professional (IM2), having contributions to society (IM3), relationships with students (IM4), innovative (IM5), adding prestige to the students (IM6), and recognition (IM7). It is expected that image has a positive effect on students satisfaction and loyalty.

Student expectations are the results of prior experience with the products or services. This construct evaluates expectations for educational quality (EXP1), for social environment available (EXP2), for fulfillment of education and career goals (EXP3), and for management and administrative excellence (EXP4). Student expectations construct is expected to have a direct relationship with student satisfaction.

Perceived quality is the served market's evaluation of recent experience. Perceived quality construct includes perceived educational quality (PQ1), contribution of social environment to goal (PQ2), managerial and administrative excellence (PQ3) and fulfillment of education and career goals (PQ4). Perceived quality is expected to have a positive effect on student satisfaction.

Perceived value is the perceived level of service quality relative to the price paid by students. Perceived value is the rating of the price paid for the quality perceived (PV1) and a rating of the quality perceived for the price paid (PV2). Perceived value structure provides an opportunity for comparison of the firms according their price-value ratio. In the model, perceived value is expected to have a positive impact on satisfaction.

Student satisfaction block indicates how much students are satisfied, and how well their expectations are met. This construct evaluates overall satisfaction level of students (SS1), fulfillment of their expectations (SS2), and university's performance versus an ideal university (SS3).

Loyalty can be defined as the tendency of a student to choose same provider (i.e. HEIs) or service over another for a particular need. Student loyalty is the ultimate factor in the SSI model. Loyalty is measured by intention of selecting same university (SL1), recommendation to others (SL2), and intention to leave the university when possible (SL3). It is expected that better image and higher student satisfaction should increase student loyalty.

### 3. Data Analysis and Results

The SSI model for HEIs consists of the aforementioned constructs which are based on well-established theories and approaches in satisfaction measurement field. A survey, developed to measure the manifest variables, was prepared in Turkish language, and the first draft was issued to 120 individuals to ensure that the wording, format, and sequencing of questions were appropriate. The final questionnaire contained 25 questions, 23 of that pertaining to the SSI model, others are for demographics. A 10-point measurement scale was used where 1 expresses a very negative point of view and 10 expresses a very positive. Face-to-face surveys were conducted to randomly chosen 498 recent graduate students of a private university in 2011. Among all collected data set, 454 were found satisfactory for data analysis.

The Structural Equation Model (SEM) of the SSI was estimated using Partial Least Squares method. SEM is a comprehensive statistical approach for testing hypotheses about relations between observed and latent variables. It combines features of factor analysis and multiple regressions for studying both the measurement and the structural properties of theoretical models. SEM is formally defined by two sets of linear equations called the inner model and the outer model. The inner model specifies the relationships between unobserved or latent variables, and the outer model specifies the relationships between latent variables and their associated observed or manifest variables.

Before PLS analysis, unidimensionality of each construct in the proposed model was checked using principal component analysis, Cronbach's alpha, and Dillon-Goldstein's  $\rho$  scores. For the data set, Cronbach's alpha and Dillon-Goldstein's  $\rho$  values of each block (greater than 0.80) and the principal component analysis tests lead to an acceptance of the unidimensionality of all blocks.

PLS procedure uses two stage estimation algorithms to obtain weights, loadings, and path estimates. In the first stage, an iterative scheme of simple and/or multiple regressions contingent on the particular model is performed until a solution converges on a set of weights used for estimating the latent variables scores. Once the outer weights are estimated, final results of the latent variables are calculated as weighted mean of manifest variables. The second stage involves the non-iterative application of ordinary least squares regression for obtaining loadings, path coefficients, mean scores and location parameters for the latent and manifest variables.

The outer model estimation results (i.e. outer weights, communality measures) are given in Table 1.

In PLS estimation reliability and validity tests are checked using individual item reliability, convergent validity and discriminate validity. All three tests indicate that the proposed SSI model is reliable and valid.

Table 1. The outer model estimation

Latent variable	Manifest variable	Outer weight	Communality	Latent variable	Manifest variable	Outer weight	Communality
Image	IM1	0,063	0,357	Expectations	EXP1	0,1006	0,388
	IM2	0,084	0,569		EXP2	0,140	0,611
	IM 3	0,069	0,436		EXP3	0,166	0,731
	IM 4	0,109	0,605		EXP4	0,202	0,723
	IM 5	0,088	0,569	Student Satisfaction	SS1	0,159	0,857
	IM 6	0,099	0,587		SS2	0,169	0,876
	IM 7	0,080	0,482		SS3	0,174	0,813
Perceived Quality	PQ1	0,120	0,624	Perceived Value	PV1	0,166	0,698
	PQ2	0,136	0,681		PV2	0,274	0,882
	PQ3	0,141	0,752	Student Loyalty	SL1	0,137	0,854
	PQ4	0,147	0,740		SL2	0,134	0,862
				SL3	0,099	0,624	

Once the outer weights are estimated, the inner model is estimated by individual ordinary least squares (OLS) multiple regressions. Simple/multiple regression coefficients for each endogenous latent variable, p-value and R-square statistics are presented in Table 2.

According to regression relationships for student satisfaction, perceived quality (0.44) and image (0.34) have significant strong impact on satisfaction. Effect of perceived value is 0.18. The R-square measure of the model is 0.72. Student expectations factor has the lowest and insignificant effect on satisfaction. This relationship was reported as a weak and non-significant relationship in other ECSI studies.

Table 2: The inner model results

Block	Factor	Regression coefficient	Student'T	P.value
Expectations R2 = 0,174	INTERCEPT	2,621		
	Image	0,417	9,739	0,000
Perceived Quality R2 = 0,237	INTERCEPT	1,489		
	Expectations	0,487	11,849	0,000
Perceived Value R2 = 0,221	INTERCEPT	1,022		
	Expectations	0,063	1,322	0,187
	Perceived Quality	0,436	9,173	0,000
Student Satisfaction R2 = 0,725	INTERCEPT	-0,282		
	Image	0,344	8,307	0,000
	Expectations	0,002	0,071	0,944
	Perceived Quality	0,442	10,242	0,000
	Perceived Value	0,184	6,473	0,000
Student Loyalty R2 = 0,653	INTERCEPT	-0,361		
	Image	0,104	2,337	0,020
	Student Satisfaction	0,725	16,311	0,000

A particular attention should be paid to student loyalty construct since it is the ultimate factor in the model. Image and student satisfaction are the independent latent variables of this constructs with the regression coefficient

values of 0.10 and 0.72 respectively. The R-square measure of this regression model is 0.65 which can be considered as satisfactory.

#### 4. Conclusion

The HEIs spend more effort on the concept of student satisfaction and loyalty to succeed and survive in this competitive environment. This study aimed to develop and test a Student Satisfaction Index (SSI) model which is adopted from ECSI for the HEIs. Student satisfaction is evaluated from different aspects, such as brand image of the school, expectations, perceived quality, perceived value, overall satisfaction and loyalty degree of students. The results of the study provide valuable strategic information for HEIs manager and researchers about the affecting factors on student satisfaction and loyalty.

According to the results, for higher student satisfaction and loyalty, the managers of HEIs should focus on the quality of the products and services they provide and image of the institution from the eyes of their students.

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