

Impact of Student Satisfaction Index Model on Quality Assessment of Higher Education: Mediating Role of Student Satisfaction

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Abstract *In today's education industry, more and more Higher Educational Institutions (HEIs) are emerging, where students have a lot of options in opting for the best intuition, which they perceive would fulfil their educational needs and requirements. Both public and private HEIs are constantly evolving their services for the students. This study examine the 'Explanatory Model' which explored the Student Satisfaction Index (SSI) and try to evaluate the student satisfaction level. The software Statistical packages for social sciences is used to test the proposed hypotheses. These HEIs should explore and formulate new and innovative strategies to attract, retain and establish good relationships with students in order to establish or keep their competitive edge in the education industry. This study concluded that 'Perceived Quality' along with other factors, influenced students' satisfaction and loyalty.*

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Introduction

Now a day, organisations from various fields or industries, have come to appreciate the significance of “customer satisfaction” for their success and survival. They are heavily making investments in areas to improve performances that enable a powerful input to customer satisfaction, e.g. ‘quality’ and ‘customer service’. But the outcome of this effect and investment is questionable? The query arises that how do we know if we succeed in achieving the key objective that is ‘satisfaction’, on a way to satisfy the customers? Truly speaking about this point is that many of the organizations don't. There is a saying among top Managers in the business world, which is broadly accepted is that “if you can't measure it, you can't manage it”. In fact, most of the companies and organizations are still not focusing their efforts on ‘customer satisfaction’ at all and many others declaring of doing so, are following an inappropriate way (Haines, 2016; Oakland, 2014).

‘Customer satisfaction’ is basically a mean of evaluating performance of an organization's total

product in connection with their respective customer requirement ([Campbell and Campbell, 1997](#)). In other words, ‘Customer Satisfaction’ is all about assessing the product or the service, an organization or a business offers to their potential customers. If the requirements of the customers are met, then we can characterize this product and product as being of good quality (Fornell et al., 1996). As a result, strategies are formed by these businesses and organizations mainly focused on developing relevant innovations directed towards improving the level of quality of the offered products, thus, increasing their productiveness and competitiveness (Tece, 2010). Similarly, ‘Student Satisfaction’ is all about evaluating the services an educational institutions offer to their potential students, and these services are only considered of good quality if they meet the needs of the students.

For this, educational institutions need to develop appropriate strategies to attain competitive edge among other institutions

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(Douglas et al., 2006). Furthermore, measuring customer's satisfaction is the measurement of customer's perception regarding your performance as a supplier ([Johnson and Gustafsson, 2006](#)). The customer's perception that is considered to be the chief provider to customer satisfaction cannot be completely controlled by an organization. Whether they stand on desires, hope, literature, invention or unrealistic circumstances; perceptions do possess a power of reality. Perceptions are actuality in gratifying customer's trade ([Zeithaml, 1988](#)).

Perceptions are also extensively contradictory. Consumption of exactly the same product by two different customers have completely diverse perceptions about its quality (Gale, 1994). The diversification may be the result of customers' expectations brought to the business deal, or may be simply due to different perception powers. Further, one customer even with constant expectations might have different perceptions about quality of product depending on frame of mind, temper or level of stress or other factors in the surrounding environment (Oliver, 2014). It is tempting to conclude that satisfaction of customer is whatever he or she ensues to think any point in time.

Various definitions of quality have been observed to focus on the relationship among the 'quality' and 'customer's requirement' and 'customer satisfaction' ([Andreassen and Lindestad, 1998](#); Sivadas and Baker-Prewitt, 2000; Kämä, 2014). The level of "quality of services" corresponds directly with the level of "customer satisfaction" (Kämä, 2014). Therefore, it can be understood that 'satisfaction' is centred on customer's expectations and perception of service quality ([Hu et al., 2009](#)). In the context of higher education, 'Quality' emphasis upon the degree to which the requirements and expectancies of students and other stakeholders are precisely reviewed and constantly increased (Athiyaman, 1997). There are problems with current education system and we all are very well aware of that. Students and graduates passing out from colleges and universities are not trained to fulfil the public demands. This issue has an undulating effect all over the society (Kuh, 2011). Students who are not prepared to be

accountable and creative citizens actually becomes burden to society.

Social benefit cost increases because of these students being products of an education system that do not concentrate on quality. They are not prepared to fulfil the needs of upcoming generations, they impact system of criminal justice and imperatively they are the citizens who undergo feelings of disturbance, confusion, unstable from society (Ps, 2005). Today's educational professionals must lead the improvement if the quality of education is to improve. Educational professionals can use quality management tool to deal with the forces of change that are pummelling education system of our nation (Sallis, 2014). Our educational community already possesses the knowledge required to improve our education system. Educational professionals are facing today major difficulty of their lack of ability to deal with the "system failures" (Claxton, 1987).

This does not permit them to build up or execute new educational processes in order to improve the quality of education. It should be noted that 'Quality' becomes a problem, when it is thought as an added feature to a product or service, and is thought of, as requiring a separate effort from managing the organisation. Whereas, Quality should be considered as a component of the product or the service itself (Stukalina, 2014). Furthermore, Quality is an attainable, quantifiable, lucrative unit, which is achievable when one is committed and is willing to struggle hard (Kristensen et al., 1999). Institution-Customer relationship in today's business environment and the satisfaction of the customers' needs has become a necessity for an organizations' survival (Baumann et al., 2012). Like any business organization, Higher-education institutions (HEIs) consider their students as customers and consider their offered services as a pure business services, keeping in mind the fundamental goal of customer satisfaction (Kwiek and Antonowicz, 2015). Thus, satisfying the needs of ultimate customers or students of HEIs, are the basic objective of these institutions. These HEIs are exploring to meet the growing number of expectations (Hennig-Thurau et al., 2001).

HEIs are fast-growing and evolving quickly in the service industry and every day this industry is consistently exposed through the globalization

processes (Burbules and Torres, 2000; Yang, 2003). This has led to important transformation in the HEIs sector around the globe, which resulted in increased competition in this industry (Beck, 2015; Kwiek and Antonowicz, 2015). Moreover, this continuous increase of standards in the HEI has effected of the global education market pushing the HEIs to develop new strategies to survive in this competitive environment (De Haan, 2015). Such strategies focus on the quality of the teaching and scientific research and components like financial supports, infrastructure setup, services regrading medical, students life style Goetsch and Davis, 2014). Oldfield and Baron (2000) also describe the services provided by the higher-education institutions to be termed as “pure” services (Oldfield and Baron, 2000).

Studies dealing with ‘customer satisfaction’ should agree to some extent on the way customer satisfaction is to be measured (Johnson et al., 2001). The search for the ‘Quality’ element has become an essential consumer trend (Tam, 2004), and the concerning industry has increased their concentration on the measurement of ‘Consumer Satisfaction’, and ‘Perceived Quality satisfaction’ has emerged (Malik, 2012). Such studies, obtaining satisfaction information, takes into account into account the causes and consequences of the previous consumption or usage experiences, which can be utilized in improving the organization’s quality of the product or services (Gallarza and Saura, 2006). The following are the essential elements for HEIs, which serves as requisites for their survival in this competitive environment:

- Developing job prospects for graduates and uplifting the applied research
- Improving the methods in fulfilling the expectations and requirements of their students
- An innovative educational management methodology.
- ‘High-Quality Education System’ that encompasses the aspects of Continuous Improvements, Ease in Adaptation of latest developments and Cost

Effectiveness. (Srikanthan and Dalrymple, 2003; Hemsley-Brown, 2006; Tsinidou et al., 2010).

Several times it happened that Students has to pay different types of charges to the HEIs for their services. Such tuition fees are usually applicable in both in public and private HEIs. The range of tuition fee charges influences the students’ viewpoint and decision about the HEIs, just like a customer in any other sector the price of a product influences a consumers’ perception (Bunce at el., 2016). Due to the huge university fees, students become much selected about the universities reputation and their services" (Kwiek and Antonowicz, 2015).

Increase in the number of private and public HEIs in Pakistan increase the number of students and boost the employment rate (HEC, 2016). However, according to Hoodbhoy (2009), the level of quality is not checked in accordance with the brisk growth in the number of universities. Business leaders must understand that squeezing customer satisfaction is a judgement considered to be crucial and tactical (Ashraf, Li. & Mehmood, 2017). An organization does it not only for standard satisfaction or prevailing award but to stay in the trade. Top management must grip this realism by admitting, conversing and acting upon three basic facts of “Customer satisfaction” as an ultimate goal, as an investment and Personnel Involved in customer satisfaction (Oliver, 2014).

The Proposed Student Satisfaction Index (SSI) Model

Figure 1 below represents the hypothesized proposed SSI model of the study. The proposed SSI model is based on the model of existing European Customer Satisfaction Index (ECSI). The main framework for this SSI model is represented by the structure of ECSI model. SSI and ECSI model differs from each other by a link between the two constructs, which are expectation and perceived value. Several previous CSI studies revealed that these constructs have no significant relationship with each other.

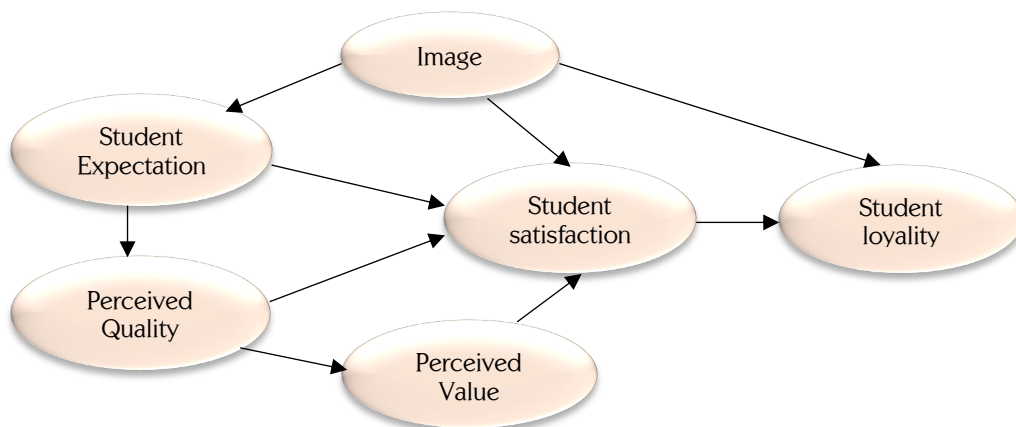


Figure 1: Hypothesized proposed Student Satisfaction Index (SSI) Model

Thus; this relationship was not included in proposed SSI model (Fornell et al, 1996; [Johnson et al., 2001](#); Temizer and Turkyilmaz, 2012). The SSI model is a structural model based on the assumptions that satisfaction is result of some of the factors of independent variables such as image of an institute, student's expectations, perceived quality, perceived value and factor of dependent variable that is student's loyalty being a consequence of student satisfaction and further student satisfaction as constructs mediator (third party), which in model acts as a mode of intervene between independent and dependent variables.

Methodology

Measurements and Data Analysis Procedure

The software Analysis of Moment Structures (AMOS) is used for data version 4.0 for confirmatory factor analysis, whereas multiple regression and for hypothesis testing, frequency analysis, reliability analysis is done on SPSS 22 version and Partial Least Square is done on Smart PLS 3.0. The Partial Least Squares (PLS) structure equation modelling approach was used to test the model ([Ashraf, Li, Butt, Naz, & Zafar, 2019](#)). Each construct was covered by a set of multiple items in the questionnaire.

Structural Equation Model (SEM)

SEM is used to analyse the gathered. There exist too many studies that have been used one of these methods in the literature. However, all of these methods have three limitations.

- The first limitation is relevant to number of dependent variable. Regression based approaches cannot be used when there are more than one dependent variables.
- The second limitation is related with assumption that all variables are observable and can be directly estimated only. However, there are some variables called latent variables that cannot be estimated directly. When studied with latent variables first generation methods are come up short. Also, considering the number of latent variables in real life, it seems that the studies are delimited substantially by this assumption.
- The third limitation is associated with variables measured without error. Each observation has certain measurement error which comprises two parts (random and systematic error) in the real world. However, first-generation techniques can only be applied in the absence of systematic and random error that is seen rarely in reality.

Because of these limitations of first-generation techniques, Structural Equation Models (SEM) that is a second-generation technique can be used as an alternative. While regression-based approaches that can analyse one layer of connection between dependent and independent variables at the same time, SEM, can model the relationships between more than one dependent and independent variables simultaneously (Gefen et al., 2000). Furthermore, SEM allows the researcher to build latent variables that are measured by observed

variables and for the observed variables to model measurement error (Chin, 1998). Finally, SEM defeats first-generation techniques limitations and thus it provides flexibility for assumptions to the researcher.

SEM is used to evaluate the latent and observed variables. In which characteristics of factor analysis and multiple regressions are combined for theoretical models studies of measurement and structural properties

(Demirbag et al., 2006). SEM approach includes two type variables: Observed variables are Manifest variable and latent are unobserved (Haenlein and Kaplan, 2004). Manifest give information about observe variable, meanwhile latent variables that cannot be directly measured (Gefen et al., 2000). Figure 2 shows the latent variables in circle, observed in rectangle, and arrow shows the relationship.

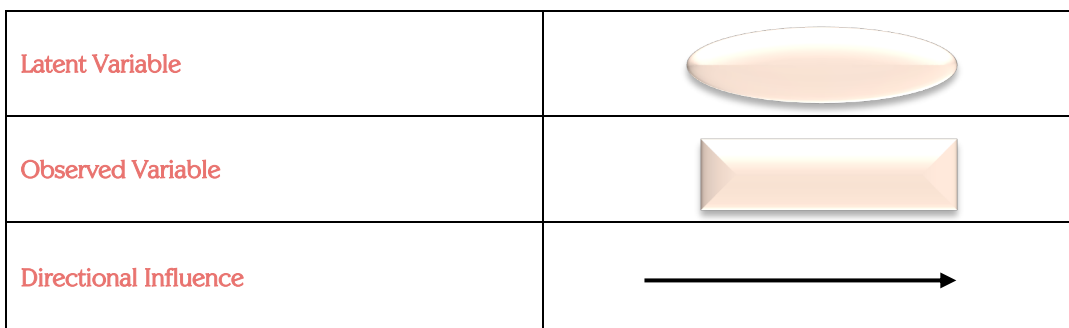


Figure 2: The shapes that are used in a Path Diagram.

Inner model and the outer model are the two sets of linear equations defined by SEM. Latent variable relationship is specified by inner model and the relation between latent variables and in linked observed manifest variables is specified by outer model (Gefen et al., 2000). There could be reflective and formative ways to relate manifest variables with latent variables: In CSI model; relation between manifest variables and latent variables are in a reflective way where the effect of same underlying construct is observed in manifest variables. Classical factor analysis models typically reflect reflective indicators (Chin, 1998). For estimation of structural model there are two common statistical approaches. Maximum Likelihood (ML) based covariance structure analysis approach is a very well-known technique of SEM (Bollen, 2014).

In Wold (1982, 1985) PLS were introduced and used for the next approach. Objectives, statistical assumptions and produced nature of the fit statistics differs these two distinctive SEM methods (Gefen et al., 2000). PLS concern generally relates to the path model descriptive influence in conjunction with the level of significance of standardized regression weights. Contrarily, demonstration of reasonable complete set of paths in the model and

corroborated operationalization of the theory and non-disconfirmation by the sample data are the objectives of ML based method (Li et al., 2020). Supporting the type of outer model that is relationship between observed variables and their connected latent constructs also distinguishes these two methods. Both formative and reflective types of relationships are supported by PLS while ML based method only supports reflective indicators (Fornell and Bookstein, 1982).

Even though; ML based approach is being implemented extensively as a dominant method and in most of the applications of structural modelling it has been used for estimating parameters but there are some conditions where PLS approach is considered better than the ML based method. In order to cope with samples of small data, ML based method is considered to be poorly suited and can present non-unique or otherwise in some situations improper solutions (Hulland, 1999). Furthermore, multi-normality and interval scaling requirements for estimating maximum likelihood estimation is not satisfied by the customer research data. Basically, two serious problems inadmissible solutions and factor indeterminacy often interfere meaningful covariance structure analysis (Fornell and Cha, 1994; Wold, 1985). PLS approach operates with

minor observations and a bundle of discrete, continuous or binary data variables. For satisfaction studies by Fornell (1992), PLS, in light of aforementioned merits, is suggested as a powerful method of estimation. Thus; PLS method is used to analyse structural model of the SSI model.

Partial Least Square (PLS) method

Herman Wold introduce the Partial Least Squares is suggested and used to analyse the high dimensional data and principal component analysis. The PLS approach for the path models with latent variables (LVs) first has been published by Wold in 1979. Herman Wold (1981)

called PLS method as “soft modelling” because of its noble features such as very few distribution assumptions, few cases can suffice versus LISREL (Henseler et al., 2009). Recently, various many software are available about PLS such as SmartPLS, SPAD, and PLS-Graph.

PLS Estimation

The outer and inner equations of SSI model are shown in Table 1. SMART PLS, 3.0 program is used for estimation of PLS approach. The results are calculated for outer shown in Table 2 and inner model in Table 3 for both Public and Private HEIs of Pakistan.

Table 1. The outer and inner equations of SSI model

Latent Variables and Inner Model Equations	Observed Variables	Outer Model Equations
ξ_1 (IM)	x ₁₁ IM1 x ₁₂ IM2 x ₁₃ IM3	$x_{1i} = \lambda_{1i}\xi_1 + \delta_{1i}$
η_1 (SE) $\eta_1 = \gamma_{11}\xi_1 + \zeta_1$	y ₁₁ SE1 y ₁₂ SE2 y ₁₃ SE3 y ₁₄ SE4	$y_{1i} = \lambda_{1i}\eta_1 + \varepsilon_{1i}$
η_2 (PQ) $\eta_2 = \beta_{21}\eta_1 + \zeta_2$	y ₂₁ PQ1 y ₂₂ PQ 2 y ₂₃ PQ 3 y ₂₄ PQ 4	$y_{2i} = \lambda_{2i}\eta_2 + \varepsilon_{2i}$
η_3 (PV) $\eta_3 = \beta_{32}\eta_2 + \zeta_3$	y ₃₁ PV1 y ₃₂ PV2	$y_{3i} = \lambda_{3i}\eta_3 + \varepsilon_{3i}$
η_4 (SS) $\eta_4 = \gamma_{41}\xi_1 + \beta_{41}\eta_1 + \beta_{42}\eta_2 + \beta_{43}\eta_3 + \zeta_4$	y ₄₁ SS1 y ₄₂ SS2 y ₄₃ SS3	$y_{4i} = \lambda_{4i}\eta_4 + \varepsilon_{4i}$
η_5 (SL) $\eta_5 = \gamma_{51}\xi_1 + \beta_{54}\eta_4 + \zeta_5$	y ₅₁ SL1 y ₅₂ SL 2	$y_{5i} = \lambda_{5i}\eta_5 + \varepsilon_{5i}$

The Outer Model Estimation

To derive weights, loadings, and path estimations, the PLS technique employs two-stage estimating algorithms. An iterative approach is used in the initial stage until a solution converges on a set of weights for estimating the latent variable scores. The final results of the studied variables were calculated

once the outer weights have been estimated. The second stage entails using ordinary least squares regression to get loadings, path coefficients, mean scores, and location parameters for the latent and manifest variables in a non-iterative manner. The outer model shows the relationship between each block of observable data and its latent variable. The outer model estimation results are given in Table 2.

Table 2. The Outer Model Estimation

Public					Private			
Indicator	Outer Weights	Loadings	Communalities	Mean	Outer Weights	Loadings	Communalities	Mean
IM1	0.17	0.744	0.756	5.879	0.539	0.874	0.765	5.839
IM2	0.224	0.789	0.788	6.432	-0.053	0.704	0.795	6.426
IM3	0.724	0.962	0.707	6.159	0.622	0.91	0.725	6.181
SE1	0.477	0.869	0.624	6.307	0.368	0.771	0.611	6.208
SE2	0.249	0.805	0.579	5.954	0.31	0.813	0.687	6.065
SE3	0.28	0.715	0.453	5.822	0.316	0.735	0.52	5.78
SE4	0.246	0.749	0.523	6.367	0.344	0.81	0.643	6.449
PQ1	0.308	0.837	0.708	7.026	0.236	0.809	0.704	7.128
PQ2	0.076	0.735	0.708	6.318	0.444	0.879	0.732	6.411
PQ3	0.58	0.942	0.733	6.758	0.549	0.905	0.787	6.75
PQ4	0.198	0.705	0.558	5.754	-0.171	0.456	0.558	5.875
PV1	0.367	0.914	0.781	4.811	0.387	0.912	0.878	4.738
PV2	0.568	0.965	0.797	5.265	0.406	0.936	0.872	5.077
SS1	0.162	0.725	0.798	6.114	0.327	0.816	0.82	5.92
SS2	0.319	0.895	0.807	6.117	0.517	0.943	0.869	5.884
SS3	0.729	0.98	0.585	5.553	0.54	0.948	0.722	5.226
SL1	0.187	0.802	0.762	5.14	0.441	0.912	0.891	6.256
SL2	0.858	0.992	0.808	5.22	0.625	0.957	0.886	6.348

The Inner Model Estimation

Individual ordinary least squares (OLS) multiple regressions are used to estimate the inner model

after the outer weights are known. For each endogenous latent variable, simple/multiple regression coefficients, p-values, and R-square statistics are shown in Table 3.

Table 3. The Inner Model Results (Public & Private HEIs)

Public					Private				
Block	Factor	Coefficients	t	P	Block	Factor	Coefficients	T	P
SE					SE				
R2=0.015	IM	0.121	1.79	0.074	R2=0.000	IM	0.003	0.057	0.955
PQ					PQ				
R2=0.377	SE	0.614	12.271	0	R2=0.002	SE	-0.048	0.967	0.336
PV					PV				
R2=0.367	PQ	0.606	11.563	0	R2=0.028		0.158	2.983	0.003
SS					SS				
R2=0.149	IM	0.022	0.625	0.533	R2=0.065	IM	-0.012	0.212	0.832
	SE	0.082	2.495	0.013		SE	-0.01	0.157	0.852
	PQ	0.544	8.693	0		PQ	0.088	1.537	0.102
	PV	0.356	5.534	0		PV	0.244	3.913	0
SL					SL				
R2=0.523	IM	0.056	1.24	0.216	R2=0.206	IM	0.047	0.922	0.357
	SS	0.71	13.783	0		SS	0.452	8.461	0

Figure 3 shows the relationship of studied variables of SSI model.

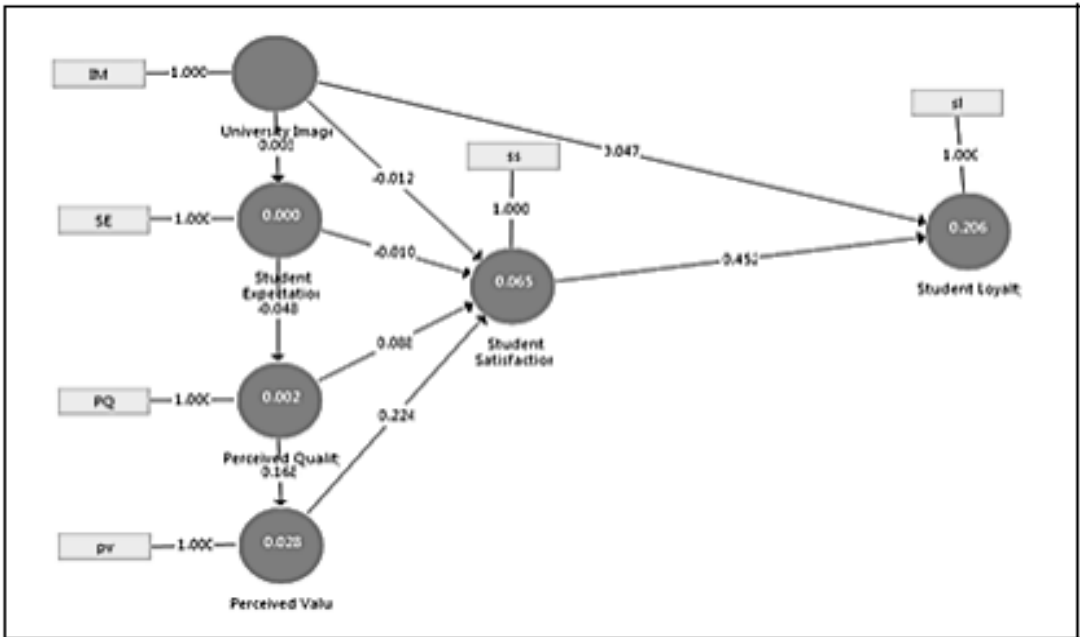
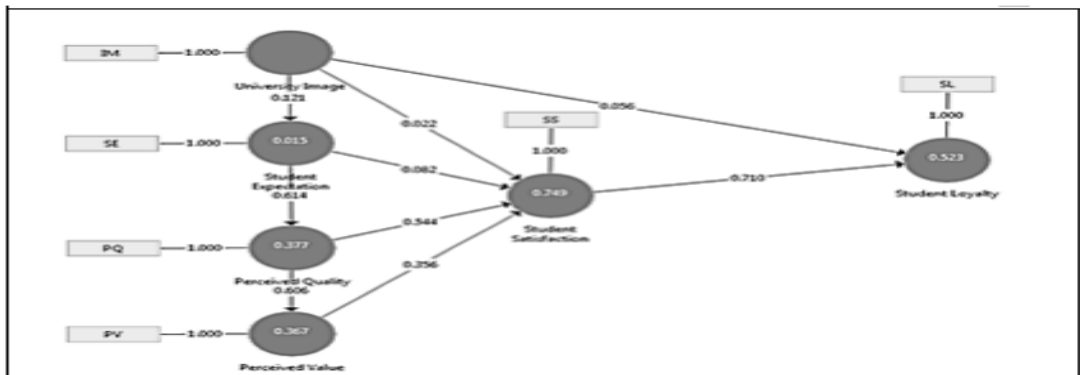


Figure 3: The Estimation Results of SSI Model of Private & Public HEIs

Private HEIs



Public HEIs

The Results of PLS Method

The PLS approach is used to estimate parameters

under the assumption that relationships between latent variables are linear.

Table 4. R2 of latent variables for PLS (Public & Private)

R2	SE	PQ	PV	SS	SL
PLS (Public)	0.015	0.377	0.367	0.749	0.523
PLS (Private)	0.000	0.002	0.028	0.065	0.206

*Based on own calculations

When PLS results are compared between Public & Private, it is seen that PLS results (R2) for Public are greater than the PLS results (R2) for Private.

Index Scores for Student Satisfaction

Figure 4 shows the weighted average for manifest variables and it shows that the private university students are less satisfied than the public

university students. The student loyalty effects to the university profit margin in the sense of students and fees structure also plays important role in the increase of students.

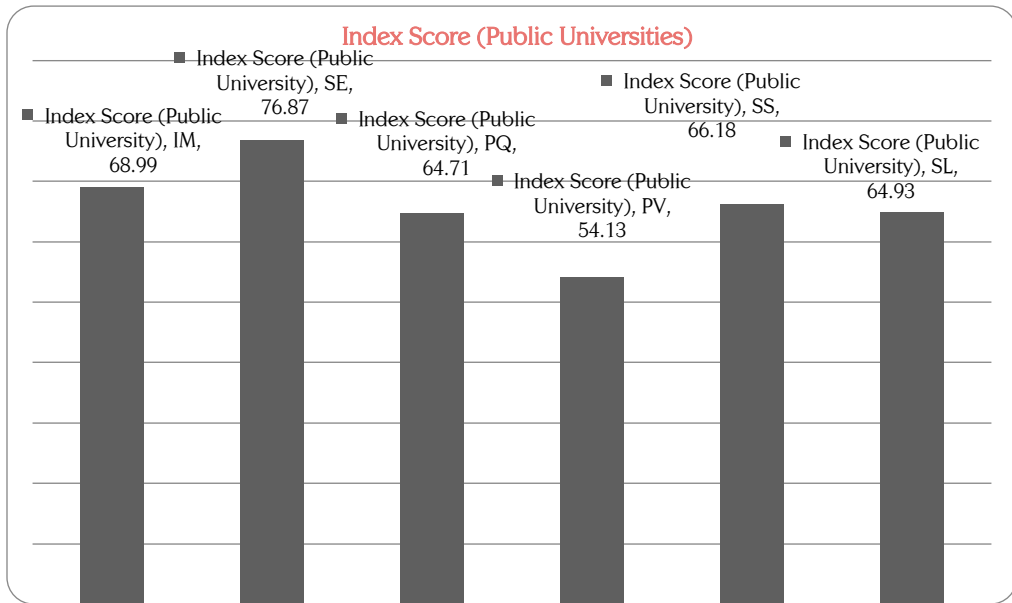
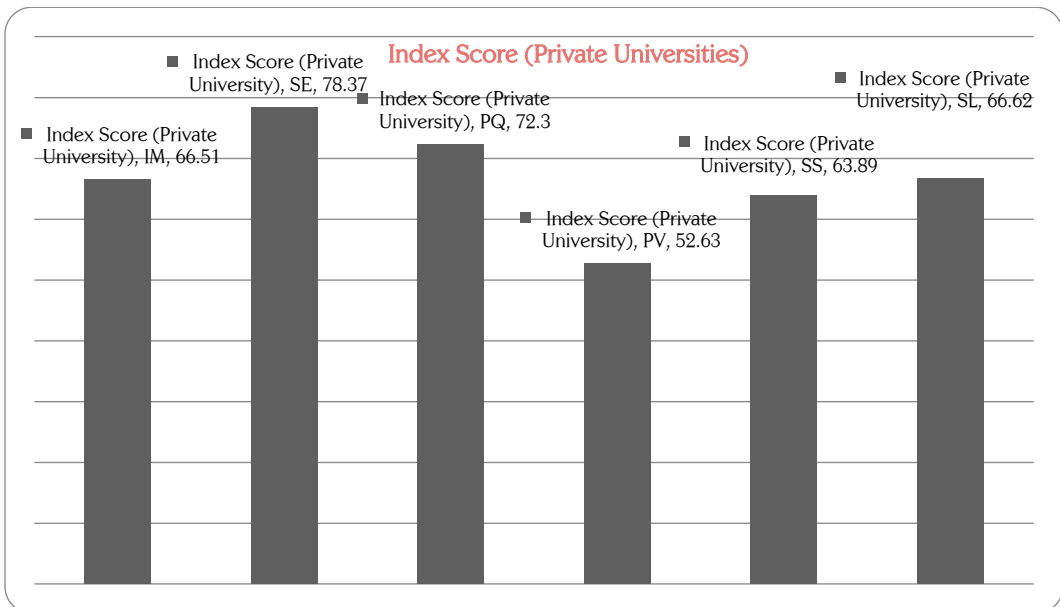


Figure 4: Index Score (Graphs)



Conclusion

According to this study, customer happiness is linked to consumer loyalty and future purchase decisions in the context of Higher Education, 'student satisfaction' therefore becomes a critical factor in sustaining continued loyalty towards the institutions with prospects for promoting new students and undertaking further studies in the same institution. It is suggested that quality as an enhancer of perceived value, which is a factor of improved satisfaction during consumption, should be given specific attention by higher education institutions. However, given the importance of the institution's image of former students, who can act as prescribers and actively advocate the institution to their family and friends, the institution's image should be given special consideration. As to the providers of professional services, institutions are aware of the value of student loyalty, goodwill, and the need to maximize student achievement and retention which are positive outcomes of student satisfaction. It is therefore imperative for HEIs to ensure that their service delivery initiatives are well targeted and directed to enhance student experience. To do so, the school should focus on enhancing its teaching quality while simultaneously developing a strong branding and

positioning plan to establish a strong and favourable image in the minds of its target audience. While teaching and learning are important aspects of students' experiences, it is argued that HEIs should strive and try to improve the students' learning process.

Limitations and Future Research

Insight from such studies results can help managers of HEIs who are interested in knowing the drivers having most impact with respect to student attraction and student retention. When deciding how to allocate scarce resources. Therefore, more studies using SSI models are highly recommended. In addition, SSI models can be utilised to improve university quality services within departments. This study was mainly focused on HEIs of Lahore, Pakistan. Future research should explore similar assessment in other cities of Pakistan to determine if this study results have any merit. This study only managed to attain data from students, as a sample group, who are currently enrolled in the HEIs. It is recommended future studies should conduct research using two samples, one of current university students and the other of former students, to investigate the studied variables.

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