

## Research Article



## Evaluation of Higher Education Service Quality Scale in Pharmaceutical Education

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### ABSTRACT

This Study evaluates the HEdPERF (Higher Education Performance) scale, a measuring instrument of service quality in higher education sector. The scale has been empirically tested for unidimensionality, reliability and validity using both exploratory and confirmatory factor analysis (CFA). Such valid and reliable measuring scale would be a tool that higher education institutions could use to improve service performance to retain the number of pharmaceutical students and to capture the global education markets. Research findings confirmed the role of key factors in service quality. These four factors such as Non-Teaching Staff, Teaching staff, Access and Reputation possess psychometric properties of construct validity. Their reliabilities are high which indicates that these variables/constructs are suitable for measuring the service quality of Indian Pharmacy education. The researcher wants to test this scale with different population of India, to discover the reliability and validity of the scale in Pharmaceutical Education. The limitation could be the development of some factors which are specific to pharmacy Education domain. Thus, this scale can be made comprehensively define the second order factor "Service Quality".

**Keywords:** Service quality, pharmaceutical education, HEdPERF scale, reliability, construct validity, CFA

### INTRODUCTION

Higher education is considered a part of service industry since the primary focus of tertiary institutions is to provide quality learning experiences to students. With the proliferation of study options available to students internationally including the use of virtual technology to deliver courses, it is no wonder tertiary institutions worldwide are under pressure to provide unique learning experiences to students so as to capture the market share. Hence, service quality becomes the means for many institutions to retain student numbers and to capture the educational market.<sup>1</sup>

The most common understanding of service quality is its association with teacher-student participation in relation to the professionalism-intimacy scale as affecting immediate and lifelong learning. However, service quality is far more complex, it is concerned with the physical, institutional and psychological aspects of higher education. For instance, Li and Kaye (1998) argue that service quality deals with the environment, corporate image and interaction among people. They distinguish between process and output quality, where the former is judged by customers during the service and the latter, after the service.

Parasuraman et al., 1994; Dabholkar et al., 2000; Brady et al., 2002 recommends measuring student satisfaction with the services provided at the universities. Higher education is realized as "experienced goods" (Petruzzellis et al., 2006), and the university is a unique service provider; it offers a variety of tangible services in terms of infrastructural facilities and technology, whereas, its core

service teaching and learning remains intangible and covert.

The unique characteristics of services make conceptualization and measurement of service quality very challenging, especially in the context of higher education. The unique and intangible service – higher education leaves long-range effects on quality of life of individual students influencing the whole fabric of society, while playing a vital role in its evolution.<sup>2</sup>

The pressure on universities to produce quality graduates is ever increasing. Moreover, universities are driven toward retaining their customers, realizing that sustainability depends upon the service quality they provide to students, their primary customers. Service quality has become the cutting edge, which distinguishes universities, contextualized in terms of a well-planned and well-delivered service and sets them from their competitors.<sup>3</sup>

A survey conducted by Owlia and Aspinwall (1997) examined the views of different professionals and practitioners on the quality in higher education and concluded that customer-orientation in higher education is a generally accepted principle. They construed that from the different customers of higher education, students were given the highest rank. Student experience in a tertiary education institution should be a key issue of which performance indicators need to address. Thus it becomes important to identify determinants or critical factors of service quality from the standpoint of students being the primary customers. Firdaus Abdullah\*2006 point out that it is important for tertiary institutions to



provide adequate service on all dimensions, and then possibly to ascertain which dimensions may require greater attention. For instance, quality improvement programs should address not only the performance of service delivery by the academics, but also the various aspects surrounding the educational experience such as physical facilities, and the multitude of support and advisory services offered by the institutions.<sup>4,5</sup>

Helms and Key (1994) noted that students could be classified as a raw material, customer, or even as employees. As a raw material, students move through a process and become the end product. As customers, students purchase the service of education. Helms and Key noted that students must be engaged in their studies, must be motivated to perform, and are evaluated – them much like employees.

In addition, quality of student performance is important to a university in much the same way that quality of employee performance is important in business setting. Further analysing the differing roles of students, Helms and Key (1994) pointed out that different educational settings provide different roles for students. In large, introductory classes the students are very much like customers; however, in specialised graduate research settings students are more like employees.<sup>6</sup>

According to Garvin (1988), service quality is a complex and volatile issue, largely driven by contextual unpredictability and complexity. Improving service quality does not happen overnight; it requires a persistent endurance to withstand the test of time through collective mindsets and efforts. Success depends on the dynamic exchange of mental models of both and non-academic staff in achieving service quality. Although such individual attributes as attitude and motivation may be difficult to modify over a short period, given the right stimulus through, for instance, an appropriate reward and compensation system, mental models can be changed for the benefit of the institution. One possibility would be to institutionalize appropriate systems within educational settings to facilitate a community of practice across all levels. That is the way to go for higher education in a changing world.<sup>7</sup>

Mohammad S. Owlia et.al 1996 suggests the first step in satisfying customer needs is the determination of how quality dimensions/factors are perceived by each group. This information, together with the prioritized objectives of a particular institution, will form the platform from which a quality program can be developed.

## MATERIALS AND METHODS

In terms of measurement methodologies, a review of literature provides plenty of service quality evaluation scales. A survey of the services marketing literature reveals two main approaches to measure service quality: SERVQUAL and SERVPERF (Cronin and Taylor, 1992). One of the most popular methods, called SERVQUAL, has its theoretical foundations in the gaps model and defines

service quality in terms of the difference between customer expectations and performance perceptions on a number of 22 measures.<sup>8</sup>

The SERVQUAL instrument, “despite criticisms by a variety of authors, still seems to be the most practical model for the measurement of service quality available in the literature” and thus expectations should be considered when assessing service quality in Higher Education (HE, here after). Regarding the stability of expectations and perceptions of service quality over time, in scope of HE, it was empirically concluded that student's perceptions of service experienced proved less stable over time than expectations.<sup>9,10</sup>

More recently, a new industry-scale, called HEDPERF was developed comprising a set of 41 items. This instrument aims at considering not only the academic components, but also aspects of the total service environment as experienced by the student. The author identified five dimensions of the service quality concept such as Non-academic, academic, aspects, reputation, program issues and understanding. Items that are essential to enable students to fulfill their study obligations, and relate to duties carried out by non-academic staff. Through questionnaire designed based on quality dimensions of the introduced techniques, perceptions and expectations among the stakeholders can be analysed.<sup>11</sup>

## Sampling method

The sampling method used in the study is convenience sampling. Data were collected from pharmacy students of both public university and private university in Chennai, for the period between October-December 2013. Data had been collected using the “personal-contact”. The questionnaires were administered with paper and pencil approach among respondents.

## Measures

Data were collected by using a questionnaire which is composed of 41 items adopted from the original HEDPERF (Firdaus, 2005), a scale uniquely developed to embrace different aspects of public and private institution's service offering to the students. The questionnaire is tested with a group of students to check the reliability, content validity, as a part of pilot study. This scale is generated and validated within higher education domain and along with the results of the pilot study suggest that no scale modification was required.

All the items in were presented as statements on the questionnaire, with the same rating scale used throughout, and measured on a 7-point, Likert-type scale that varied from 1 for strongly disagree to 7 for strongly agree. In addition to the main scale addressing individual items, respondents were asked to provide an overall rating of the service quality, satisfaction level.

There were also three open-ended questions allowing respondents to give their personal views on how any aspect of the service could be improved.<sup>12</sup>



The draft questionnaire was eventually subjected to pilot testing with a total of 50 students, and they were asked to comment on any perceived ambiguities, omissions or errors concerning the draft questionnaire. Data were collected from students of both public universities and private university in Chennai, for the period between October –December 2013. Data had been collected using the “personal-contact” approach.

A total of 500 questionnaires were distributed to both public and private university, of these 410 was returned and ten discarded due to incomplete responses. The number of usable sample size is 400.

## RESULTS AND DISCUSSION

### Measurement assessment

There are missing data in the questionnaire and this is imputed using Mean Imputation using SPSS 21. The reliability of all the constructs are above .8 indicate good reliability expect the one construct whose reliability is 77.<sup>13,14</sup>

The exploratory factor analysis used to extract the items for each construct by using principal component analysis as it is commonly used method of parameter estimation. The four constructs were extracted by using Varimax rotation and this rotation is commonly used in Factor analysis.

During the factor analysis, 23 items were deleted due to cross loadings of items and low communality values (less than 0.5) to more than one factor and poor factor loadings of the items. The remaining items are statistically significant as the t-values are in the range of 9.48 to 11.81, which are high.

From the methodology laid by a measurement model was specified using Amos 21 by confirmatory Factor Analysis. The measurement model will determine the convergent and discriminant validity of the constructs and this will assess the psychometric properties of the constructs.

Very recently, (Aguinis & Edwards, 2014) advises to use confirmatory factor analysis (CFA) to evaluate the construct validity.<sup>15,16</sup>

Multivariate normality was evaluated using Mardia's coefficient and the data was found to be non-normal as the multivariate kurtosis (critical ratio) was 29, which was much above  $\pm 2$  and suggest, moderate multivariate non-normality. Owing to the non-normal data, we use Bollen-Stine bootstrapping method using 5000 samples for parameter estimation as bootstrapping distribution does not have rigorous assumptions like normal distribution.<sup>17,18</sup>

### Measurement model

The measurement model was analyzed using Amos 21 software with Maximum Likelihood Estimation. The fit indices values used to assess the CFA model are Cmin/df, Goodness of fit index (GFI), Comparative fit index (CFI),

Tucker Lewis Index (TLI) and Root Mean square error of Approximation (RMSEA). In accordance Bentler the model fit is satisfactory where the GFI, CFI and TLI exceeds 0.9 and RMSEA values are less than 0.08.<sup>19</sup>

**Table 1:** Correlations, Descriptive Statistics & Cronbach alpha.

Construct	No of Items	Mean	Standard Deviation	Correlations			
				1	2	3	4
Non Teaching Staff	4	4.06	1.39	$\alpha=.86$			
Access	5	4.53	1.23	.558**	$\alpha=.87$		
Academic Aspects	6	4.17	1.34	.524**	.361**	$\alpha=.86$	
Reputation	3	4.26	1.43	.539**	.467**	.601**	$\alpha=.77$

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

**Table 2:** Factors validity using CFA

	Parameters	Value	Desirable Values
1	Cmin/df (degrees of freedom)	2.075	< 3
2	Goodness of Fit (GFI)	0.912	> 0.9
3	IFI (Incremental fit Index)	0.953	> 0.9
4	CFI (Confirmatory fit index)	0.952	> 0.9
5	TLI (Tucker Lewis index)	0.953	> 0.9
6	Root Mean Square Error of Approximation (RMSEA)	0.60	< 0.7

### Construct validity

The two important validity are convergent and discriminant validity. To measure the convergent validity, Average variance extracted (AVE) calculated must be above 0.5 and the path coefficient must be above 0.6. The AVE for all the constructs are above 0.5 and the construct reliabilities are above 0.7 suggest the convergent validity. The squared inter construct correlation value of all the constructs are lower than the AVE values indicate the discriminant validity. The correlations between constructs are significant shows nomological validity. Thus the constructs used in the study possess convergent, Discriminant & nomological validity.

**Table 3:** Average Variance Extracted (AVE), Construct Reliability & Squared Correlation.

Constructs	AVE	Construct Reliability	squared Inter construct correlation		
			2	3	4
1. Non Teaching Aspects	0.6	0.86	0.34	0.36	0.33
2. Teaching Aspects	0.6	0.80		0.29	0.50
3. Access	0.6	0.87			0.17
4. Reputation	0.5	0.84			

### AVE is Average Variance extracted

We have analyzed to estimate the impact of common method variance as this data collected is self reporting.



Using the Harman's single Factor test, the variance extracted by a single factor is 33% which is less than 50%, indicates that there is no problem due to common method bias. In order to confirm further, we did a latent common factor method and found that the factor loading do not change much with and without the common factor.<sup>20</sup>

## CONCLUSION

The results indicate that there are four factors which serve as factors for service quality. These four factors are Non-Teaching aspects; Teaching Aspects, Access and Reputation possess psychometric properties of construct validity. Their reliabilities are high which indicates that these variables/constructs are suitable for measuring the service quality of Indian Pharmacy education. The researcher wants to test this scale to other sample in different population, to discover the reliability and validity of the scale. Meanwhile some factors can be developed which are Domain specific with respect to Pharmaceutical Education. Thus, this scale can be made comprehensively define the second order factor "Service Quality". The future research could be adding certain variables thus performing a partial scale development process.

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