IN SEARCH OF SERVICE QUALITY GAP IN PHARMACEUTICAL EDUCATION: AN ALTERNATIVE APPROACH

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Abstract: *Purpose: The study attempts to unfold the difference in opinion of students and faculties as service receiver and provider respectively in relation to the ideal (expected) and actual (perception) of the pharmaceutical education service offered. This way it identifies the one another reason of the gap in service quality. This has been manifested as lack of "industry ready human resources."*

Methodology/Approach: Based on literature survey and opinion of the experts items for ideal(expected) and actual(perception) service has been developed .Further authors have carried out survey in randomly chosen students and faculties of pharmaceutical education institutes in West Bengal, India. Finally, independent sample t- test procedures have been applied to understand and analysis the gaps.

Finding: It has been found statistically significant difference in lower number of items in case of expectation but higher number of items in actual and which clearly inclined the gap in delivery between service provider and service receivers.

Practical implications: Academic institutes for rectifying the errors because delivery gaps can apply this work. Academics would also benefit greatly since it will add value to existing body of literature for education service.

Keywords: *Pharmaceutical education, Service industry, Education service quality, Independent sample t-test, Indian Pharmaceutical industry*

1. INTRODUCTION

Education service sector is having direct impact on the society for socio-economic development. Especially, Higher education enabled a person for a respectable and responsible position in the society by enriching the individual with major moral, cultural, and scientific values of human civilization (Saginova et al., 2008). Higher educational institutes (HEIs) exhibit important roles in the development of society through the education, research, and innovation. HEIs provide training and skills to preform specific jobs or tasks in career of an individual (Thomson, 2008).

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In developing countries, the HEIs compete for resources and quality. Moreover, the Scarcity of resources like research fund, qualified faculties, and infrastructure affect the quality of higher education system. In last two decades, an explosion of higher education institutes has taken place in India. Especially, the private sector higher education institutes had exponential growth to fulfill the demand of trained and skilled man-power for the purpose of the industry. The demand of higher education has been increased due to huge growth in young population in India. Approximately, 140 million youth of Indian are between the ages of 18-23 years (MHRD report 2015-2016). Parents are devoting their saving as higher education cost for their children and they expect an immediate return on investment (ROI) in terms of a job for their children. The placement becomes an important aspect of social recognition for every higher education institute in India. Consequently, the standard, and the quality of education are judged by placements records of the institutes whereas, the placements are depended upon the institutes' education quality and students' industrial skill development. Although, the Central and many state governments have deputed many regulatory bodies to monitor the functional and structural aspect of quality of both governmental and private HEIs but the quality of higher education in India yet to qualify the global standards .

The pharmacy education is not isolated with current scenario of the higher education system in country. The pharmacy education has basic objectives to emphasize on the core knowledge of the pharmaceutical science and practices of medical equipment required to serve the society. Thus, the pharmacy education has focus on the development of the industry ready professionals for industrial use. In India, the journey of pharmacy education started in 1937, when the Banaras Hindu University at Varanasi had launched the first 3 years bachelor course of pharmacy. Until 1980, this course spread with slow pace and only 37 (11 universities and 26 institutes) offered the basic pharmacy course in the country. Henceforth, these numbers were accelerated with exponential rate and 1034 institutes & universities were approved by AICTE and PCI for the bachelor in pharmacy course by 2015-2016. The students have an easy opt to select the pharmacy as a career option and approximately, 87000 students have been enrolled in bachelor degree of pharmacy by 2015-2016 session (AICTE dashboard, 2016). However, only 8 percent pharmacy institutes have approved government aid and rest 92 percent institutes are private funded. Consequently, the inadequacy in the numbers of faculties, the modern equipment, and advance skill development programs in those mentioned pharmacy institutes have compelled to offer the courses with limitation.

However, shortfall in standard pharmacy institutes/colleges has not been appreciated by the industry as the pharmaceutical industry is growing with sustainable rate of 12-13 percent compounded annually (McKinsey Report- 2013). This industry accounted for 2 percent of Indian GDP (Gross Domestic Product) and about 1.86 million employments in the country. Moreover, National skilled

development India, 2015 predicted that about 3.5 million employments could be generated by the pharmaceutical industry by 2022. Therefore, evaluation of the ways to bridge the gap between the demand & supply of the skilled pharmacy graduates and the parents/students satisfaction towards the return of investment (ROI) are required with immediate research. The one possible solution for this problem is the improvement of the education quality in the pharmacy institutes in India to qualify the global standards. In this way, the pharmacy institutes/colleges can satisfy the different stakeholders (Industry, Students, Parents, and Society) of the systems. Therefore, measurement of the education service quality is necessary.

2. LITERATURE REVIEW

2.1. Service and Service Quality Models

Zeithaml et al. (1985; 1987) identified the most accepted characteristics of a Service are Intangibility, Variability, Perishability and Inseparability. The researchers have observed the Service quality, as the overall satisfaction of a customer about service experienced, whereas Sureshchander et al. (2002) included that the process of the service delivery is also an important parameter because of the inseparability between production and consumption of a service. During literature review, we observed that the *SERVQUAL model* proposed by Parsuraman et al. (1985;1988) has been considered as most popular instrument for the measurement of the service quality but modified versions of this instrument are widely applied in various service industries such as Banking, Retail, Health, and Education (Viraiyan et al., 2015). Basically, *SERVQUAL model* is proposed to measure the general service quality based on the gap between customers' expectations, and perceptions of the service experienced. The initial *SERVQUAL model* comprised of ten dimensions but after extensive statistical analysis in 1988, it was reduced to five dimensions model that had 42-items scale .These five dimensions are *1) Tangibility, 2) Reliability, 3) Responsiveness, 4) Assurance and 5) Empathy.*

However, many researchers had criticized the *SERVQUAL model* (Carman, 1990; Cronin & Taylor, 1992; Buttle, 1996) have argued that the many dimensions or items in *SERVQUAL model* were industry specific and needed additional items for new dimensions based on the service specifications and the setting of investigations. Cronin & Taylor (1992) proposed a new service quality (SQ) measurement model called *SERVPERF* – A Performance based SQ measurement model that was well supported by Babakus & Boller (1992) and Boulding et al. (1993). *SERVPERF model* measured the perceived service by customer with the ideal feature of a service set. Over the period marketer applied these *SERVQUAL* and *SERVPERF model* as a base and developed the new instruments for specific service industries. *INDSERV*-measuring the industry customer perception based on four dimensions (Gounares, 2005).*LODGSERV model* was developed for measurement of service quality of hotel

industry (Knutson et al., 1990). Wong et al. (1999) established the *HLSAT-* the three dimensions model for hospitality industry with the application of the extended version of *SERVQUAL model*. Dabholkar et al. (2000) constructed with the four antecedents features of a service i.e. Reliability, Personal attention, Comfort and Features. Although this study argued that, the antecedent model can provide the complete understanding of perceived Service quality, but these antecedents of SQ were not applicable on the wide range of service industry. As because of this antecedents approach dealt / with customers' satisfaction that depended on many factors like sales person communication, social referrals, information sources, and perception about the service organization (Kangis & Passa, 1997; Gounaris et al., 2003).

2.2. Higher Education Service Quality Measurement

In context of the Education service industry, the measurement of the quality has been highly influenced by the *SERVQUAL* and *SERVPERF model* (Seithaml et al., 1990). McElwee et al. (1993) have adopted *QUALED model* to explain the higher education service quality. This model considered eight dimensions for assessing the higher education service quality. Joseph & Joseph (1997) have applied the Importance-Perception Approach (IPA) in higher education system. They have identify seven factors i.e. *1) Program Issues, 2) Physical aspect, 3) Academic reputation, 4) Career opportunities, 5) location, 6) Time and 7) Other*. The authors have considered these factors as "Determinants of service quality in Education" and said Determinants varied from the *SERVQUAL* five dimensions of SQ. This study has suggested that higher education service is differed considerably from other services in relation to evaluation of quality. Most recently, Abdullaha (2005; 2006) developed *HEdPERF model* for higher education service system. The *HEdPERF* covered 38 items scale under five factors. These are as follow *1) Non-Academic Aspect, 2) Academic Aspect, 3) Reputation, 4) Access, and 5) Program Issues*.

2.3. Higher Education Quality Measurement in Indian Context

In Indian context, Mahapatra & Khan (2000) have proposed systematic integrated model *EduQUAL* to understand the level of satisfaction of all stakeholders in technical education system. Another instrument *SQM-HEI* has been proposed by Senthikumar & Arulraj (2011) that explained the placement is the main criteria for the parents and the students to select a higher education institute in India. This model has also revealed that the three dimensions- *Teaching methodology, The physical study resources, and Disciplinary Action*, have improved the chances of employability of a student in higher education institute. Moreover, the researcher have argued that the prestigious Bodies like AICTE and UGC should take the initiatives to promote the concept of the industry and institutes interaction with each other from primary stage of course designing to the final stage of course completion.

Mandal & Banerjee (2012) have identified three dimensions- *1) Industrial focus, 2) Industrial readiness, 3) The quality of program aspect* of the measurement of engineering program quality.

2.4. Pharmaceutical Education Service Quality Measurement

In relation to the pharmacy education Service Quality (PESQ) measurement, Holdford & Reinders (2001) have established a new instrument that descried the PESQ as combination of the functional (process) quality and the technical quality. The functional quality is related with *learning resources, faculty attributes, and the administrative variables* where-as Technical quality is related with *modernization, intellectual development, and mental satisfaction* of students. They developed a five-factor model of PESQ. These five factors are as follow:

1. *Facilities*–related to latest tools and techniques of teaching process, computerized laboratory etc.
2. *Interpersonal Behavior of faculties*- related to the faculties attitude and behavior in campus.
3. *Faculty expertise*–The domain knowledge and current market knowledge of the faculty.
4. *Faculty communication* – Faculty should have good communication skill with clear concept about the class activities.
5. *Administration*–Staffs approach towards students, willingness to help the students, and sensitive with Students' issues etc.

Sun et al. (2016) have advocated the implementation of *Total quality Management (TQM)* concept in pharmacy education system. The study has explained the TQM consistent of the development of a climate in which the organization can deliver the high quality education and emphasized on the quality of teaching staffs alongside the adoption of different techniques to deliver the lectures. In Indian context, Singh (2016) has proposed an instrument for the improvement of pharmaceutical education quality namely *Quality by Design in Education (QbDE)* that evaluated nine elements at micro level for the improvement of overall education quality. These elements are *1) Quality policy of the institutes, 2) Learning environment in the institution, 3) Academic facilities, 4) Adequate qualified faculties, 5) scope for career development, 6) practical training for students, 7) continuous evaluation system 8) Facilities of on-job training & faculties development program and 9) Industrial related skill development aspects.*

3. RESEARCH PROCESS AT A GLANCE

It is highly required to conceptualize our whole research process and then we have elaborated the same in this section. While reviewing the literature, we have identified

five most important factors (dimensions) (Yildiz & Kara, 2009; Joseph & Joseph, 1997; Angell et al., 2008; Sultan & Wong, 2012; Senthilkumar & Arulraj, 2010) for understanding service quality (SQ) of Higher education institutes (see first column of Table1). In addition, we have summarized 21 service quality attributes (Yildiz & Kara, 2009; Joseph & Joseph, 1997; Angell et al., 2008; Sultan & Wong, 2012; Senthilkumar & Arulraj, 2010) across these five factors (see the second column of Table 1). For elaborating these service quality attributes in the perspective of pharmaceutical academics, we have developed 45 items (see the fourth column of Table 1) with the help of expert's comments (opinion). The experts' were chosen from the senior academics researchers of pharmacy education and executives of pharmaceutical industries. Then based on these 45 items, we have developed two questionnaires that we have employed to cater opinion of the students and faculties of pharmaceutical institutes. Mainly, we have decided to carry out primary survey in the state of West Bengal of India for many reasons, including geographical scopes for the researchers. Finally, our objective was to judge statistically the difference in the opinion on these 45 relevant items separately for "expectation from a pharmaceutical institute" and "Actual or perception from the pharmaceutical institutes" between faculties and students of those institutes.

Table 1
Service Quality Attributes with respective sources,
related dimension and number of items

Dimensions	Service Quality Attributes	Sources	Related Items
Infrastructure	Ideal Location and excellent layout of College/Institute's campus	Yildiz S.M & Kara A. (2009)	14
	Supporting facilities like accommodation, mess, classrooms, internet etc. with state of art technology	Joseph M. & Joseph B. (1997) andAngell R.J. et al. (2008)	
	Adequate Library facilities and Library timing	Sultan P. & Wong H. Y.(2012)	
	Laboratories with modern equipment	Mahapatra S.S & Khan M.S (2007)	
Academic & Social reputation	Institute/College's approval and affiliation from the governing bodies	Joseph M. & Joseph B. (1997)	4
	Institute/College's accreditation by the external agencies	Joseph M. & Joseph B. (1997)	
	Course tuition fee at a reasonable price	Angell R.J. et al. (2008)	

(Table 1 contd...)

Dimensions	Service Quality Attributes	Sources	Related Items
	College/Institute's position in current rating of pharmacy colleges in the country by external agencies	Joseph M. & Joseph B. (1997))	
	Peer group like family and friends acceptance of College/Institute.	Joseph M. & Joseph B. (1997))	
Career Development	Excellent placement opport-unities for students	Senthilkumar N. & Arulraj A. (2010)	6
	Alumni interactions opport-unities for career development	Angell R.J. et al. (2008)	
	Industry interactions for skill development	Angell R.J. et al. (2008)	
	Career counseling with Industrial experts	Sultan P. & Wong H. Y.(2012)	
Academic Program	Adequate experienced and qualified Faculties	Sultan P. & Wong H. Y.(2012)	
	Pedagogy or teaching methodology	Senthilkumar N. & Arulraj A. (2010)	10
	Curriculum of the pharmacy course	Senthilkumar N. & Arulraj A. (2010)	
	College/Institute allows its students to think and preform out of box.	Sultan P. & Wong H. Y.(2012)	
	Depth of Course (Duration of the course, Classroom timing, and Study materials)	Sultan P. & Wong H. Y.(2012) and Joseph M. & Joseph B. (1997)	
Admini-strative System	Transparency in the norms and the administrative processes	Yildiz S.M & Kara A. (2009)	11
	Adequate skilled technical & supporting staffs	Yildiz S.M & Kara A. (2009)	
	Media presence for providing adequate information	Sultan P. & Wong H. Y.(2012)	

3.1. Hypothesis

Two hypotheses were proposed for the empirical research study related to the Expectation gap and the perception gap between the service providers represented by Faculties and the service receivers represented by the Students of the pharmacy institutes of West- Bengal – A state of India.

H_{01} : There is no significant gap between the expected service offered by the Faculties as representative service providers & the expectation of students as service receivers.

H_{a1} : There is a significant gap between the expected service offered by the Faculties as representative service providers & the expectation of students as service receivers.

H_{02} : There is no significant gap between the actual service offered by the Faculties as representative service providers & the perceived service by the students as service receivers.

H_{a2} : There is a significant gap between the actual service offered by the Faculties as representative service providers & the perceived service by the students as service receivers.

4. RESEARCH METHODOLOGY

4.1. Instrument and Design

For the purpose of realizing two hypotheses mentioned, we have developed two questionnaires having three parts in each. First part of the questionnaires covered personal identification along with qualification and number of publications (research output) for faculties whereas, for students' in-place of number of publications their future plans after Bachelor course of pharmacy has been queried. Where, the second and third parts of the questionnaires were same for faculties and students. The second part complied the 45 items in continuous scale that vary from 5 (strongly agree) to 1(strongly disagree) and asked their expectation (ideal) from a pharmaceutical institute offering Bachelor in pharmacy degree course and the third part with same items but here, asked their actual experience in terms of perception . It is also not out of place to mention that third part of questionnaire was executed after a 7 days gap of the execution of the part 2 of questionnaire for both faculties and students. The design of our research is based on the assumption that if two stakeholders namely 'faculties' and 'students' differs in opinion significantly that must have impact on quality of service, which is a difference between actual and expectation. Therefore, we have tested the expectation opinion difference and actual (perception) opinion difference between faculty members and students as two independent groups and further, we have statistically tested the said differences with the help of an independent sample t-test procedure between said two groups namely 'faculty group' and 'students group'. Actually, we have followed the procedures laid down by Mandal & Banerjee (2012).

4.2. Sample selection and Data collection method

We have decided to carry out primary survey in West Bengal- A state of India covering 7 percent Indian population (Census of India, 2011) and having representative character of India. Moreover, there are five to thirteen colleges in between 1997- 2015 (PCI REPORT, 2007) and more than 1000 students admitted in these pharmacy colleges (AICTE Dashboard, 2016). Not only supply side but also

demand of pharmaceutical graduate is also in growth trajectory. There are more than 7 percent pharmaceutical manufacturing units are located in West Bengal (Pharmaceutical manufacturing units in India, 2007). Above all, we have proximity to state of West Bengal, which prompt us to carry out primary survey here.

Sample selection process we have opted was stage wise SRS method (simple random sampling). First, we have chosen seven colleges out of total thirteen colleges randomly. Nevertheless, one college did not respond to our proposal. Among the six colleges, we have developed separate list of faculties and students and from the each list, we have randomly selected 50 faculties and 140 students that are approximately 20 percent of the total listed candidate. Finally, we have succeeded to take opinion of the 50 faculties and 124 students. Among them 57 was final years students and 67 was second year students. We have not opted for first year and third year students. The chosen institutes are located one in Asansol, two in Durgapur, one in Kolkata and rest two in greater Kolkata. We have offered part 1 and Part 2 of the questionnaire when our research team met the respondents first time and rest parts after seven days after collecting part 1 and part 2. During their response if they need any clarification, it has been cleared from our side.

5. RESULT AND DISCUSSION

The data have been analyzed using Statistical Package for Social Science (SPSS, Window version 20.0).

The independent sample t-test was used in this situation since we have to compare the mean of two populations. Moreover, before applying the independent sample t-test it is necessary to examine whether the variance of the two populations was equal or not. Thus, Levene's test was applied to follow two situations of equal variance assumed, and no equal variance assumed (Field, 2009; pp. 334-340). If Levene's test for Equality of Variances was significant i.e. p-value is lower than obligatory value 0.05 ($p< 0.05$) then the null hypothesis (H0) was rejected and the alternative hypothesis (Ha) was accepted which assume the difference between the two variances. Thus, we should considered the value of t- test with the labelled of Equal variance not assumed. According to result of Levene's test for equality of variances, the value of t-test was considered (Field, 2009; pp. 339-340). The output of the Levene's test result and respective t-test values are indicated in the Table-2 & Table-3.

We have used two different tables for the purpose of viewing gap, if exists between two stakeholders namely 'faculties' and 'students'. Table-2 indicates expectation gap between faculty and students whereas, table-3 covers gap in actual experience as named as perception gap between same stakeholders. In Table-2, it shows that there are 10 out of 45 expectation variables (22 percent) having significant gap between the Faculties and students' means and 28 variables (62

Table 2
Levene's test and Independent sample t-test on expectation of Faculties and Students

Dimension	Item no.	Assum-ption	Levene's Test for Equality of Variances		t-test for Equality of Means			Remark
			F-Value	Sig.	t-value	df	Sig.	
Infrastructure	V1 ex	*EVNA	12.687	0.000	1.568	66.80	0.122	NO GAP
	V2 ex	**EVA	0.065	0.800	9.164	172	0.000	GAP exists
	V3 ex	EVA	0.602	0.439	.0953	172	0.342	NO GAP
	V4 ex	EVNA	9.587	0.002	-1.672	118.60	0.097	NO GAP
	V5 ex	EVA	3.154	0.078	-0.432	172	0.667	NO GAP
	V6 ex	EVA	2.255	0.135	-0.588	172	0.557	NO GAP
	V7 ex	EVNA	41.443	0.000	-5.317	158.56	0.000	GAP exists
	V8 ex	EVNA	28.011	0.000	-4.319	164.87	0.000	GAP exists
	V9 ex	EVNA	10.078	0.002	-1.881	116.39	0.062	NO GAP
	V10 ex	EVNA	37.423	0.000	-4.006	163.42	0.000	GAP exists
	V11 ex	EVA	0.073	0.787	0.239	172	0.811	NO GAP
	V12 ex	EVA	0.002	0.967	-0.148	172	0.882	NO GAP
	V13 ex	EVA	3.050	0.083	-2.263	172	0.025	GAP exists
	V14 ex	EVA	1.773	0.185	-0.696	172	0.487	NO GAP
Academic & Social reputation	V15 ex	EVA	0.627	0.430	0.392	172	0.696	NO GAP
	V16 ex	EVA	1.101	0.296	-0.084	172	0.933	NO GAP
	V17 ex	EVA	0.600	0.440	-0.361	172	0.719	NO GAP
	V18 ex	EVNA	26.354	0.000	-4.301	170.74	0.000	GAP exists
Career Development	V19 ex	EVNA	6.171	0.014	1.526	81.10	0.131	NO GAP
	V20 ex	EVNA	127.09	0.000	-8.087	160.26	0.000	GAP exists
	V21 ex	EVNA	15.630	0.000	-2.559	165.39	0.011	GAP exists
	V22 ex	EVNA	5.532	0.020	-1.373	168.91	0.172	NO GAP
	V23 ex	EVA	0.055	0.815	0.286	172	0.775	NO GAP
	V24 ex	EVA	0.885	0.348	0.591	172	0.556	NO GAP
Academic Program	V25 ex	**EVA	3.059	0.082	0.996	172	0.321	NO GAP
	V26 ex	EVA	0.123	0.726	-0.141	172	0.888	NO GAP
	V27 ex	EVA	0.581	0.447	0.657	172	0.512	NO GAP
	V28 ex	*EVNA	7.770	0.006	-1.626	103.29	0.107	NO GAP
	V29 ex	EVA	0.005	0.945	2.589	75.83	0.012	GAP exists
	V30 ex	EVNA	5.572	0.019	5.784	68.67	0.000	GAP exists
	V31 ex	EVA	1.798	0.182	-0.722	172	0.471	NO GAP
	V32 ex	EVA	2.825	0.095	-0.798	172	0.426	NO GAP
	V33 ex	EVA	2.367	0.126	-0.713	172	0.477	NO GAP
	V34 ex	EVA	0.719	0.398	0.215	172	0.830	NO GAP
Administr-ative System	V35 ex	EVNA	31.546	0.000	-1.678	154.79	0.095	NO GAP
	V36 ex	EVNA	7.713	0.006	1.047	172	0.296	NO GAP
	V37 ex	EVA	0.020	0.888	0.002	172	0.998	NO GAP
	V38 ex	EVA	3.031	0.083	-0.198	172	0.844	NO GAP
	V39 ex	EVNA	7.570	0.007	-1.678	154.79	0.095	NO GAP
	V40 ex	EVA	2.932	0.089	1.047	172	0.296	NO GAP
	V41 ex	EVA	0.059	0.809	0.002	172	0.998	NO GAP
	V42 ex	EVA	0.000	0.987	-0.198	172	0.844	NO GAP

(contd...)

Dimension	Item no.	Assum-ption	Levene's Test for Equality of Variances		t-test for Equality of Means			Remark
			F-Value	Sig.	t-value	df	Sig.	
	V43 ex	EVA	0.100	0.752	0.283	172	0.778	NO GAP
	V44 ex	EVA	1.095	0.297	0.885	172	0.378	NO GAP
	V45 ex	EVA	3.428	0.066	-0.963	172	0.337	NO GAP
Overall Gap existence in expectation data			10 variables out of 45 (22 percent)					NO GAP

*EVNA: Equal variance not assumed, **EVA: Equal variance assumed

Table 3
Levene's test and Independent sample t-test on perception of Faculties and Students

Dimension	Item no.	Assum-ption	Levene's Test for Equality of Variances		t-test for Equality of Means			Remark
			F-Value	Sig.	t-value	df	Sig.	
Infrastructure	V1 per	*EVNA	19.404	0.000	-8.819	148.81	0.000	GAP exists
	V2 per	EVNA	10.199	0.002	1.674	138.67	0.096	NO GAP
	V3 per	**EVA	2.523	0.114	-4.230	172	0.000	GAP exists
	V4 per	EVNA	7.098	0.008	-9.665	130.96	0.000	GAP exists
	V5 per	EVA	0.006	0.937	-14.079	172	0.000	GAP exists
	V6 per	EVNA	13.421	0.000	-10.605	136.55	0.000	GAP exists
	V7 per	EVNA	23.731	0.000	-24.213	166.04	0.000	GAP exists
	V8 per	EVNA	37.739	0.000	-24.556	171.05	0.000	GAP exists
	V9 per	EVNA	23.824	0.000	-9.279	164.17	0.000	GAP exists
	V10 per	EVNA	56.293	0.000	-8.489	155.39	0.000	GAP exists
	V11 per	EVA	0.274	0.602	-4.945	172	0.000	GAP exists
	V12 per	EVNA	14.009	0.000	-4.290	146.35	0.000	GAP exists
	V13 per	EVNA	6.356	0.013	-7.604	148.33	0.000	GAP exists
	V14 per	EVA	0.572	0.451	-5.643	172	0.000	GAP exists
Academic & Social reputation	V15 per	EVA	3.795	0.053	-2.471	172	0.014	GAP exists
	V16 per	EVNA	28.983	0.000	-9.558	169.77	0.000	GAP exists
	V17 per	EVNA	41.190	0.000	-8.996	169.02	0.000	GAP exists
	V18 per	EVNA	52.292	0.000	-12.426	162.03	0.000	GAP exists
Career Development	V19 per	EVNA	62.203	0.000	-11.199	151.51	0.000	GAP exists
	V20 per	EVNA	6.618	0.011	-4.155	110.72	0.000	GAP exists
	V21 per	EVA	0.013	0.908	-8.307	172	0.000	GAP exists
	V22 per	EVA	3.320	0.070	-6.544	172	0.000	GAP exists
	V23 per	EVNA	85.378	0.000	-15.564	154.80	0.000	GAP exists
	V24 per	EVA	3.447	0.065	-9.810	172	0.000	GAP exists
Academic Program	V25 per	EVNA	8.220	0.005	-4.340	124.907	0.000	GAP exists
	V26 per	EVNA	6.618	0.011	-4.597	98.718	0.000	GAP exists
	V27 per	EVNA	25.133	0.000	-4.109	66.130	0.000	GAP exists
	V28 per	EVA	0.637	0.426	-4.675	172	0.000	GAP exists
	V29 per	EVNA	3.936	0.049	-4.376	73.609	0.000	GAP exists

contd. table 3

Dimension	Item no.	Levene's Test for Equality of Variances			t-test for Equality of Means			Remark
		Assum-ption	F-Value	Sig.	t-value	df	Sig.	
	V30 per	EVA	0.149	0.700	-3.569	172	0.000	GAP exists
	V31 per	EVNA	21.209	0.000	-8.532	171.996	0.000	GAP exists
	V32 per	EVNA	34.895	0.000	-10.53	123.00	0.000	GAP exists
	V33 per	EVNA	88.682	0.000	-7.064	123.00	0.000	GAP exists
	V34 per	EVNA	51.383	0.000	-11.15	123.00	0.000	GAP exists
Administr-ative System	V35 per	EVA	3.021	0.084	-3.68	172	0.000	GAP exists
	V36 per	EVNA	12.436	0.001	-11.43	171.41	0.000	GAP exists
	V37 per	EVA	3.257	0.073	0.005	172	0.996	NO GAP
	V38 per	EVNA	13.623	0.000	-7.96	158.39	0.000	GAP exists
	V39 per	EVNA	43.079	0.000	-10.24	157.93	0.000	GAP exists
	V40 per	EVNA	79.858	0.000	-8.716	123.00	0.000	GAP exists
	V41 per	EVNA	33.529	0.000	-9.966	167.05	0.000	GAP exists
	V42 per	EVNA	15.872	0.000	1.793	73.39	0.077	NO GAP
	V43 per	EVNA	13.717	0.000	-0.729	70.45	0.468	NO GAP
	V44 per	EVNA	13.717	0.000	-8.496	162.45	0.000	GAP exists
	V45 per	EVA	0.019	0.890	-3.305	172	0.001	GAP exists
	Overall Gap existence in perception data				41 variables out of 45 (91 percent)			GAP exists

*EVNA: Equal variance not assumed, **EVA: Equal variance assumed

percent) are having the faculty mean higher than student mean. Moreover, when we examined each dimension separately, we observed that infrastructure dimension has 11 out of 14 variables (78 percent), Academic reputation has 3 out of 4 (75 percent) variables, career development has 3 out 6 variables (50 percent), academic program has 5 out of 10 variables (50 percent) and Administrative system has 6 out of 11 variables (54 percent) with higher faculty means than student means (see the Table 4). The overall gap in the expected (ideal) services quality by both the stakeholders i.e. faculty and students are 22 percent that allow us to accept the first null hypothesis (H_{01}) of our study, i.e. there is no significant gap between the expected service offered by the Faculties & the expectation of students as service receivers.

On the other hand, Table-3 indicates that 41 out of 45 perception variables (91 percent) holding significant gap between faculties and students means and 43 variables (95 percent) have the faculty mean higher than student mean. Again, we observed that infrastructure has 13 out of 14 variables (93 percent), Academic reputation has 4 out of 4 variables (100 percent), career development has 6 out 6 variables (100 percent), academic program has 10 out of 10 variables (100 percent) and Administrative system has 10 out of 11 variables (91 percent) with higher faculty means than student means (see the Table 5). The overall gaps in perception variables (actual) are 91 percent that allow us to reject the second null hypothesis

Table 4
Expectation Mean differences between Students and faculties

Dimension	Item no.	Students Mean value N = 124	Faculties Mean value N= 50	Gap value	Remark
Infrastructure	V1 ex	4.68	4.42	-0.26	Faculties Mean Value was high
	V2 ex	4.28	2.54	1.74	Students Mean value was high
	V3 ex	4.57	4.44	0.13	Students Mean value was high
	V4 ex	4.59	4.76	-0.17	Faculties Mean Value was high
	V5 ex	4.48	4.56	-0.08	Faculties Mean Value was high
	V6 ex	4.54	4.62	-0.08	Faculties Mean Value was high
	V7 ex	4.25	4.88	-0.63	Faculties Mean Value was high
	V8 ex	4.32	4.84	-0.52	Faculties Mean Value was high
	V9 ex	4.67	4.82	-0.15	Faculties Mean Value was high
	V10 ex	4.62	4.94	-0.32	Faculties Mean Value was high
	V11 ex	4.48	4.44	0.04	Students Mean value was high
	V12 ex	4.58	4.60	-0.02	Faculties Mean Value was high
	V13 ex	4.69	5.00	-0.31	Faculties Mean Value was high
	V14 ex	4.67	4.74	-0.07	Faculties Mean Value was high
Academic & Social reputation	V15 ex	4.70	4.66	0.04	Students Mean value was high
	V16 ex	4.67	4.68	-0.01	Faculties Mean Value was high
	V17 ex	4.76	4.80	-0.04	Faculties Mean Value was high
	V18 ex	4.43	4.86	-0.43	Faculties Mean Value was high
Career Development	V19 ex	4.81	4.66	0.15	Students Mean value was high
	V20 ex	3.36	4.72	-1.36	Faculties Mean Value was high
	V21 ex	4.62	4.86	-0.24	Faculties Mean Value was high
	V22 ex	4.72	4.84	-0.12	Faculties Mean Value was high
	V23 ex	4.75	4.72	0.03	Students Mean value was high
	V24 ex	4.76	4.70	0.06	Students Mean value was high
Academic Program	V25 ex	4.75	4.64	0.11	Students Mean value was high
	V26 ex	4.81	4.82	-0.01	Faculties Mean Value was high
	V27 ex	4.66	4.58	0.08	Students Mean value was high
	V28 ex	4.56	4.76	-0.20	Faculties Mean Value was high
	V29 ex	4.58	4.20	0.38	Students Mean value was high
	V30 ex	4.60	3.72	0.88	Students Mean value was high
	V31 ex	4.64	4.72	-0.08	Faculties Mean Value was high
	V32 ex	4.72	4.80	-0.08	Faculties Mean Value was high
	V33 ex	4.79	4.86	-0.07	Faculties Mean Value was high
	V34 ex	4.97	4.86	0.11	Students Mean value was high
Administrative System	V35 ex	4.48	4.86	-0.38	Faculties Mean Value was high
	V36 ex	4.73	4.86	-0.13	Faculties Mean Value was high
	V37 ex	4.79	4.78	0.01	Students Mean value was high
	V38 ex	4.69	4.80	-0.11	Faculties Mean Value was high

contd. table 4

Dimension	Item no.	Students Mean value N = 124	Faculties Mean value N= 50	Gap value	Remark
	V39 ex	4.60	4.76	-0.16	Faculties Mean Value was high
	V40 ex	4.68	4.54	0.14	Students Mean value was high
	V41 ex	4.54	4.53	0.01	Students Mean value was high
	V42 ex	4.55	4.58	-0.03	Faculties Mean Value was high
	V43 ex	4.48	4.44	0.04	Students Mean value was high
	V44 ex	4.75	4.64	0.09	Students Mean value was high
	V45 ex	4.70	4.80	-0.10	Faculties Mean Value was high

For 28 variables out of 45 variables, the Faculty means are higher than the student means.

Table 5
Perception Mean differences between Students and Faculties

Dimension	Item no.	Students Mean value N = 124	Faculties Mean value N= 50	Gap value	Remark
Infrastructure	V1 per	4.02	4.94	-0.92	Faculties Mean Value was high
	V2 per	1.65	1.34	0.31	Students Mean value was high
	V3 per	3.34	4.12	-0.78	Faculties Mean Value was high
	V4 per	3.13	4.50	-1.37	Faculties Mean Value was high
	V5 per	1.59	4.06	-2.47	Faculties Mean Value was high
	V6 per	2.56	4.32	-1.76	Faculties Mean Value was high
	V7 per	2.00	4.84	-2.84	Faculties Mean Value was high
	V8 per	2.27	4.84	-2.57	Faculties Mean Value was high
	V9 per	2.83	4.36	-1.53	Faculties Mean Value was high
	V10 per	4.03	4.92	-0.89	Faculties Mean Value was high
	V11 per	3.14	4.06	-0.92	Faculties Mean Value was high
	V12 per	3.82	4.58	-0.76	Faculties Mean Value was high
	V13 per	3.86	4.78	-0.92	Faculties Mean Value was high
	V14 per	3.50	4.28	0.78	Faculties Mean Value was high
Academic & Social reputation	V15 per	3.77	4.22	-0.45	Faculties Mean Value was high
	V16 per	3.88	4.86	-0.98	Faculties Mean Value was high
	V17 per	3.85	4.84	0.99	Faculties Mean Value was high
	V18 per	3.38	4.86	-1.48	Faculties Mean Value was high
Career Development	V19 per	3.66	4.92	-1.26	Faculties Mean Value was high
	V20 per	3.57	4.26	-0.69	Faculties Mean Value was high
	V21 per	2.72	4.44	-1.72	Faculties Mean Value was high
	V22 per	3.66	4.62	-0.96	Faculties Mean Value was high
	V23 per	3.50	4.94	-1.44	Faculties Mean Value was high

contd. table 5

Dimension	Item no.	Students Mean value N = 124	Faculties Mean value N= 50	Gap value	Remark
	V24 per	3.04	4.58	-1.54	Faculties Mean Value was high
Academic Program	V25 per	4.07	4.66	0.59	Faculties Mean Value was high
	V26 per	4.00	4.76	0.79	Faculties Mean Value was high
	V27 per	2.38	3.36	-0.98	Faculties Mean Value was high
	V28 per	3.44	4.32	-0.88	Faculties Mean Value was high
	V29 per	3.07	3.88	-0.81	Faculties Mean Value was high
	V30 per	3.01	3.76	-0.75	Faculties Mean Value was high
	V31 per	3.83	4.78	-0.95	Faculties Mean Value was high
	V32 per	4.02	5.00	-0.98	Faculties Mean Value was high
	V33 per	4.37	5.00	-0.63	Faculties Mean Value was high
	V34 per	4.11	5.00	-0.89	Faculties Mean Value was high
Administrative System	V35 per	3.81	4.40	-0.59	Faculties Mean Value was high
	V36 per	4.05	4.92	-0.87	Faculties Mean Value was high
	V37 per	3.66	3.67	-0.01	Faculties Mean Value was high
	V38 per	3.77	4.78	-1.01	Faculties Mean Value was high
	V39 per	3.90	4.92	-1.02	Faculties Mean Value was high
	V40 per	4.20	5.00	-0.80	Faculties Mean Value was high
	V41 per	3.10	4.54	-1.44	Faculties Mean Value was high
	V42 per	3.65	3.20	0.45	Students Mean value was high
	V43 per	3.28	3.46	-0.18	Faculties Mean Value was high
	V44 per	3.52	4.72	-1.20	Faculties Mean Value was high
	V45 per	3.98	4.56	-0.58	Faculties Mean Value was high

For 43 variables out of 45 variables, the Faculty means are higher than the student means.

(H_{02}). Therefore, we accepted second alternative hypothesis (H_{a2}) i.e. there is a significant gap between the actual service offered by the 'Faculties' & the perceived service by the 'students'.

Consequently, we can conclude that both the stakeholders (Faculties and students) of pharmacy education expecting almost similar quality of education program from the institutes but there is huge gap between the actual (perceived) qualities of pharmacy program in these institutes in India. These gaps in education quality are because of service delivery gap between the service provider represented by faculties of institutes and the students who are service taker. The students required more career development opportunities as 100 percent gap exist in perception means for that, the pharmacy institute's administration should focus on social reputation and academic affiliation from the reputed government bodies. Moreover, the institutes' administration should have feedback system to evaluate the academic activities to improve the pharmacy program structure. Hence, with

better infrastructure and clear communication between students and institute administration the standard quality of pharmacy program can improve.

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