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Research Article

A Study On Student Satisfaction In Higher Educational Institutions In Mumbai Using Importance Performance Analysis

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ABSTRACT

As competition between higher educational institutions becomes more intense, service quality and student satisfaction become of paramount importance to higher educational institutions. The present research uses Importance Performance Analysis (IPA) to understand the importance given to various service quality attributes by students as well as their perception of the performance of the educational institution in those attributes. The participants in the study are second and third year students of undergraduate programmes of an autonomous college in the western suburbs of Mumbai. The sample size is 403, selected through stratified random sampling. The results of the study show that students regard canteen facilities and administrative facilities as important attributes while judging service quality of an educational institution. However, since the performance of the institution with regards to these attributes is low, the college should concentrate on improving the service quality in these areas. Students do not place much importance on curriculum and course structure, which could point to their ignorance about the importance of a student-centric and well-rounded curriculum in their holistic development as well as future employability. This study can be used by the educational institution to allocate their resources effectively so that more focus is on areas where the performance of the college is not satisfactory vis-a-vis the high importance given by students to those areas.

Keywords: *Student satisfaction, Service quality, National Educational Policy 2020, Higher educational institutions, Importance Performance Analysis*

Introduction

Higher education sector is an important and emerging component of service sector. Similar to other industries in the service sector, higher education too is facing stiff competition, with a plethora of educational institutions offering multi-disciplinary choice-based programmes and courses to students who are the ultimate consumers. The introduction of National Education Policy 2020 (NEP 2020) has further amplified the intense competitive scenario between higher educational institutions as they compete for more admissions as well as to retain the existing students. Service quality and student satisfaction thus become of paramount importance to higher educational institutions as they compete for student intake. This brings into focus the key question as to what are the attributes that students look for while selecting a higher education institution and how do these attributes perform vis-à-vis the importance accorded to them by the students. The present research aims to use Importance Performance Analysis (IPA) to understand the importance given to various service quality attributes by students as well as their perception of the performance of the educational institution in those attributes.

Review of literature

Menon & Moitra (2015) highlighted the use of Importance Performance analysis in studying the attributes of service quality in higher educational institutions. The study showed differences in expectations and its impact on satisfaction among students, thus bringing into focus the need for differentiated marketing strategies to

attract students. The study concluded that students consider non-academic facilities and not just academic facilities to evaluate their satisfaction.

Darwas et al. (2020) evaluated student satisfaction with laboratory facilities in a high school in Indonesia using Importance Performance analysis. The study identified internet access in the laboratory, hardware used and visual facilities as areas where importance and performance ratings did not meet service quality standards. The areas where the ratings meet quality standards were clean laboratory, software, clarity of laboratory rules, security and study time.

Suroto et al. (2017) studied student satisfaction with the academic services provided by the accounting programme at a Jakarta private university by calculating Customer Satisfaction Index (CSI). The study concluded that the university should focus on factors such as space to support student activities and availability of books and teaching materials which were rated very important by students but whose performance was low. The overall CSI level was calculated at 71% which indicated that students were in all satisfied with the program.

Hamid et al. (2014) evaluated the employability skills of graduates in Malaysia from the employers' point of view by comparing the importance given by employers to specific skills and their satisfaction with those skills. Importance Performance Analysis was used in the study and it was seen that there was a significant difference between importance and satisfaction with regards to the graduates' communication skills in English. Also, gaps were identified in areas such as ability to encourage others, ability to recognise and analyse issues, ability to think out of the box, etc.

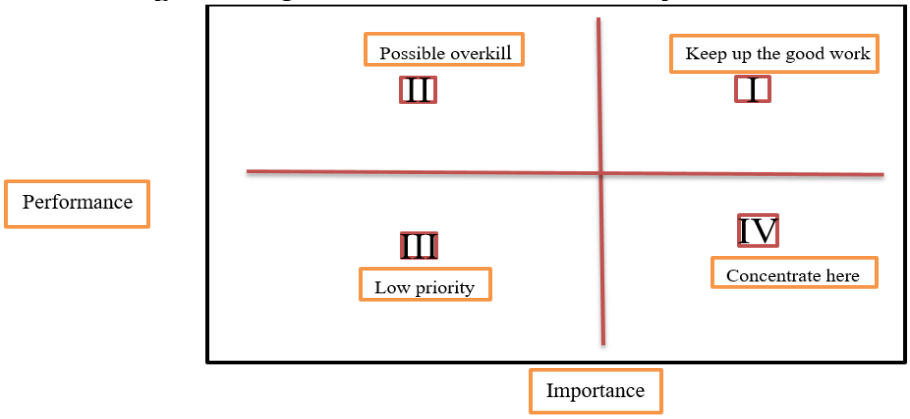
Lakkoju (2016) analysed student satisfaction using Importance Performance Analysis among first year and final year MBA students of an autonomous engineering college in Andhra Pradesh. While the first year students expressed dissatisfaction over all the 24 attributes measured, the final year students identified social opportunities, quality of seminars conducted and student feedback system as areas which needed improvement. Thus, the study noticed a year-on-year decline in quality of the measured attributes.

Rozina et al. (2016) undertook a study to identify teaching attributes using the Students' Evaluation of Educational Quality (SEEQ) questionnaire as well as use Importance Performance Analysis (IPA) to understand satisfaction of students of three different courses at a polytechnic institute in Malaysia. The study found gaps in nine factors pertaining to pedagogical and motivational aspects such as friendliness and accessibility of teachers. The study concluded that combined use of SEEQ as well as IPA could help teachers in improving their teaching methods by working on their less satisfactory teaching aspects.

Theoretical Framework

Importance-performance analysis (IPA) is a measure of service quality initially proposed by Martilla and James in 1977. The basic concept behind IPA is that in order to ensure customer satisfaction, a service provider should study the importance given by customers to various dimensions of service quality as well as the performance of those dimensions (Martilla & James, 1977). IPA uses a two-dimensional grid where importance is on the x-axis and performance is on the y-axis. The means of importance and performance attributes are plotted on the x and y axes respectively and the grid is analysed. ***Quadrant I*** denotes attributes with high performance and high importance which are opportunities for maintaining competitive advantage. ***Quadrant II*** has attributes of high performance but low importance, implying that the service provider would be better off diverting the resources elsewhere. ***Quadrant III*** has attributes of low performance as well as low importance and are considered as low priority. ***Quadrant IV*** denotes attributes with low performance but high importance are to be viewed as major weaknesses which require immediate attention for improvement (Menon & Moitra, 2015).

Figure 1 Importance Performance Analysis Grid



Source: Menon & Moitra (2015)

Objectives of the study

1. To evaluate the Importance and Performance values of each service quality attribute of higher educational institution using Importance Performance Analysis (IPA) technique
2. To compare importance and performance perception of service quality attributes of second year and third year students
3. To compare importance and performance perception of service quality attributes of male and female students
4. To discuss the implications of the results

Research design and methodology

Data collection:

The research is based on data collected from primary as well as secondary sources.

Primary data

Primary data was collected through a questionnaire from second and third year students of undergraduate programmes of an autonomous college in Mumbai. 425 responses were collected and after eliminating irrelevant responses, 403 responses were considered for the final study.

Secondary data

Secondary data has been collected from websites, books, journals and other publications.

Data analysis and interpretation

Ten factors that influence student satisfaction in higher educational institutions were considered for the study viz. Co-curricular and extracurricular activities (10 items), Canteen facilities (8 items), Teaching staff (6 items), Curriculum/ Course structure (7 items), Computer lab facilities (5 items), Library facilities (9 items), College & Classroom Infrastructure (7 items), Administrative function (5 items), Examinations and Evaluation (5 items) and Gymkhana and sports facilities (4 items) (Dalvi & Menon, 2023)
Each respondent was asked to evaluate the importance and performance for each attribute with a Likert-type five-point scale, where 1 represents very unimportant and very dissatisfied respectively and 5 represents very important and very satisfied respectively. The reliability of the questionnaire was measured by Cronbach's α. The overall reliability of importance and performance attributes in the survey were 0.950 and 0.965, respectively, indicating that the internal consistency is excellent (George and Mallery, 2003). Each dimension-wise Cronbach's α value is given in the following Table 1. All Cronbach's α values are greater than 0.7 which indicate adequate internal consistency.

Table 1: Cronbach's α values of Importance and Performance of each dimension

Dimension	Cronbach's α values	
	Importance	Performance
College & Classroom Infrastructure	0.699	0.803
Library facilities	0.858	0.846
Gymkhana and sports facilities	0.842	0.851
Computer lab facilities	0.869	0.870
Canteen facilities	0.803	0.898
Administrative function	0.754	0.873
Teaching staff	0.792	0.877
Curriculum/ Course structure	0.827	0.883
Examinations and Evaluation	0.759	0.845
Co-curricular and extracurricular activities	0.874	0.920

The mean scores for Importance and Performance attributes are given in Table 2.

Table 2: Mean Importance and Performance scores

		Overall		Male		Female		Second Year		Third Year	
		I	P	I	P	I	P	I	P	I	P
College & Classroom Infrastructure	A	4.46	3.39	4.37	3.42	4.50	3.37	4.60	3.37	4.36	3.41
Library facilities	B	4.29	3.33	4.20	3.29	4.34	3.35	4.40	3.38	4.21	3.30
Gymkhana and sports facilities	C	4.19	3.11	4.25	2.95	4.16	3.20	4.32	3.12	4.10	3.11
Computer lab facilities	D	4.42	3.52	4.37	3.42	4.43	3.57	4.50	3.51	4.36	3.52
Canteen facilities	E	4.55	2.65	4.48	2.60	4.59	2.67	4.65	2.76	4.49	2.59
Administrative function	F	4.53	3.33	4.49	3.29	4.55	3.34	4.62	3.40	4.47	3.28
Teaching staff	G	4.64	3.88	4.56	3.81	4.68	3.91	4.71	3.82	4.59	3.91
Curriculum/ Course structure	H	4.37	3.50	4.29	3.44	4.42	3.53	4.48	3.57	4.31	3.46
Examinations and Evaluation	I	4.62	3.71	4.53	3.62	4.67	3.75	4.69	3.74	4.58	3.69
Co-curricular and extracurricular activities	J	4.32	3.29	4.19	3.26	4.39	3.31	4.44	3.31	4.25	3.28
Grand Mean		4.44	3.37	4.37	3.31	4.47	3.40	4.54	3.40	4.37	3.35
Note: I: Mean Importance Score; P: Mean Performance Score											

It is seen from the above Table no. 2 that Mean importance score ranges from 4.10 to 4.69 whereas Mean performance score lies between 2.59 and 3.91. It means that all dimensions/factors related to satisfaction regarding service quality in educational institutions are important for students but performance of these educational institutions with respect to these dimensions/factors is not satisfactory. The mean performance score of Canteen facilities is less than 3 in all cases indicating dissatisfaction among students whereas the mean performance score of Teaching staff is close to 4 in all cases indicating satisfactory performance.

Importance Performance Analysis- Overall

Initially we prepare matrix for Importance-Performance Analysis (IPA) considering overall data. The average performance score was plotted on the Y axis of the IPA grid and the importance score on the X axis. We consider grand mean values as centre for each importance and performance axis.

Matrix 1: Importance Performance Analysis- Overall

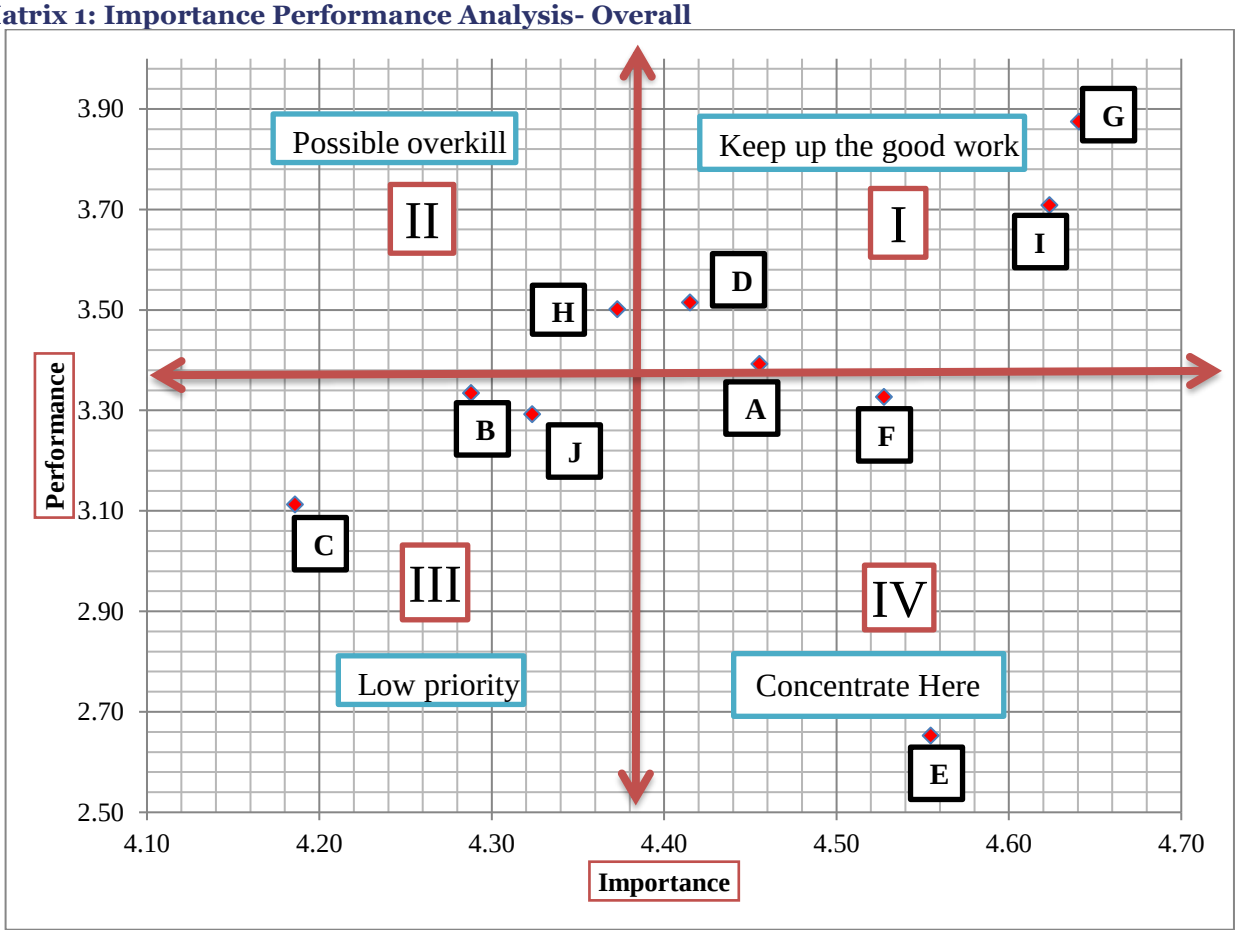


Table no. 3 Importance Performance Analysis- Overall

Quadrant		Dimensions
I	Keep up the good work (both high performance and high importance)	Computer lab facilities. Teaching staff Examinations and Evaluation
II	Possible overkill (high performance but low importance)	Curriculum/ Course structure
III	Low priority (both low performance and low importance)	Library facilities Gymkhana and sports facilities Co-curricular and extracurricular activities
IV	Concentrate Here (low performance but high importance)	College & Classroom Infrastructure Canteen facilities Administrative function

Based on Matrix 1 and Table no. 3, it is observed that Quadrant I includes three dimensions (viz. Computer lab facilities, Teaching staff and Examinations and Evaluation) with high level of importance as well as high performance level. Quadrant II includes the dimension of Curriculum/ Course structure indicating high performance but low importance from the student's point of view. Quadrant III with both low performance and low importance dimensions includes Presence of Library facilities, Gymkhana and sports facilities as well as Co-curricular and extracurricular activities. Top priority dimensions such as College & Classroom Infrastructure, Canteen facilities, Administrative functions are in Quadrant IV. This indicates that educational institutions should take efforts to provide good College & Classroom Infrastructure and Canteen facilities to students and should also focus on Administrative functions.

Importance – Performance Analysis- Male students

Next, we prepare IPA matrix considering responses of male students.

Matrix 2: Importance Performance Analysis- Male students

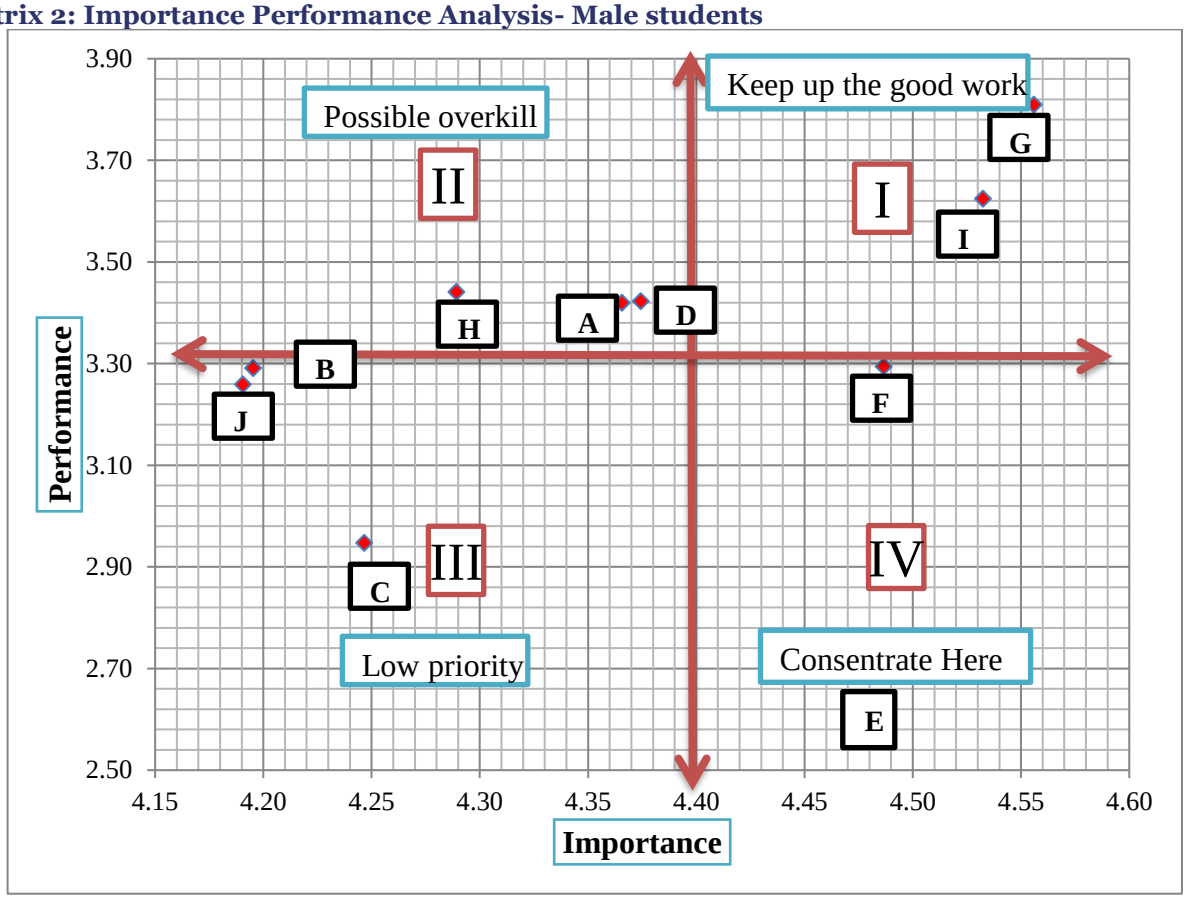


Table no. 4 Importance Performance Analysis- Male students

Quadrant		Dimensions
I	Keep up the good work (both high performance and importance)	Teaching staff Examinations and Evaluation
II	Possible overkill (high performance but low importance)	College & Classroom Infrastructure Computer lab facilities Curriculum/ Course structure
III	Low priority (both low performance and importance)	Library facilities Gymkhana and sports facilities Co-curricular and extracurricular activities
IV	Concentrate Here (low performance but high importance)	Canteen facilities Administrative function

Based on Matrix 2 and Table no. 4, it is observed that Quadrant I includes two dimensions (viz. Teaching staff and Examinations and Evaluation). Quadrant II includes three dimensions (College & Classroom Infrastructure, Computer lab facilities and Curriculum/ Course structure). Quadrant III includes Library facilities, Gymkhana and sports facilities as well as Co-curricular and extracurricular activities. Top priority dimensions such as Canteen facilities and Administrative functions are in Quadrant IV.

Importance Performance Analysis- Female students

Next, we prepare IPA matrix considering responses of female students.

Matrix 3: Importance – Performance Analysis- Female students

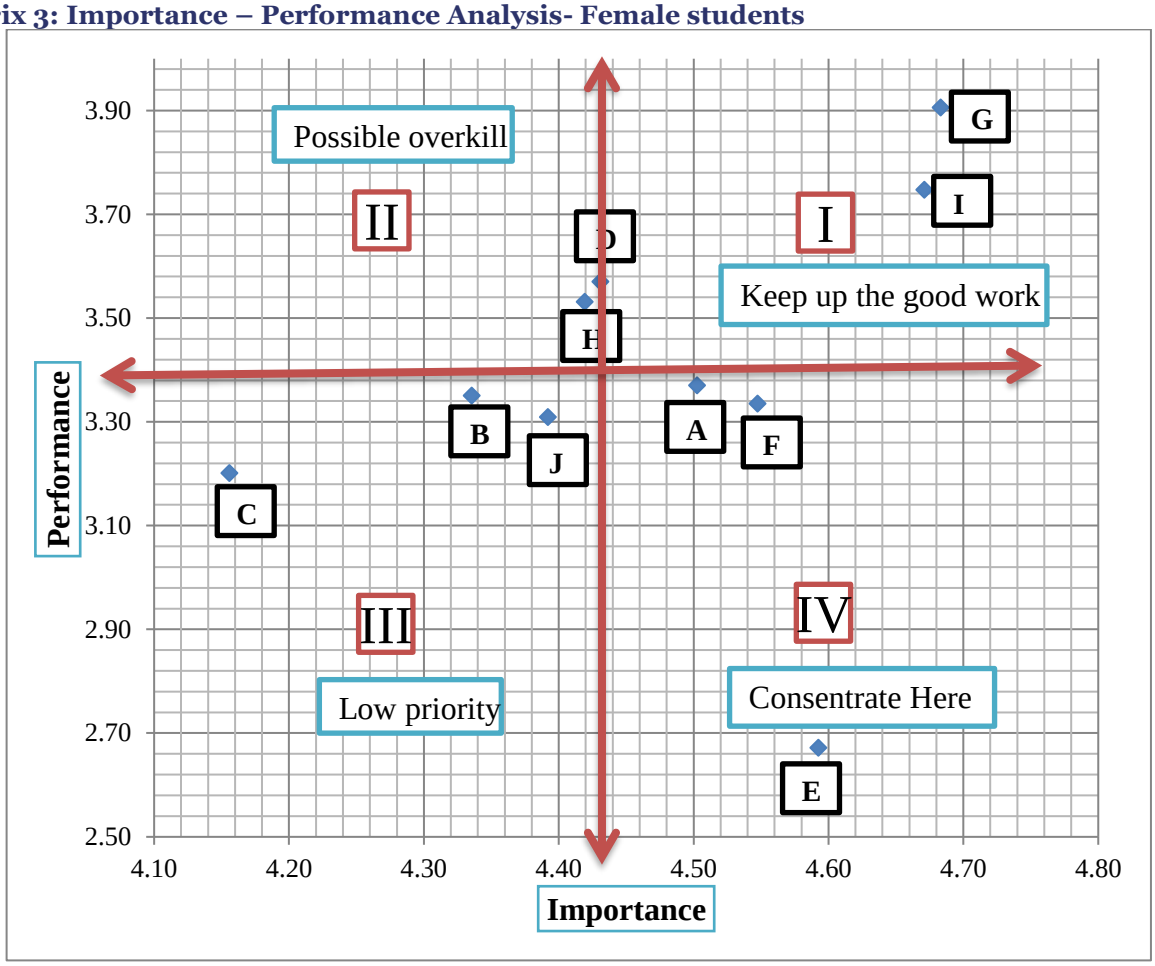


Table no. 5 Importance – Performance Analysis- Female students

Quadrant		Dimensions
I	Keep up the good work (both high performance and importance)	Teaching staff Examinations and Evaluation
II	Possible overkill (high performance but low importance)	Computer lab facilities Curriculum/ Course structure
III	Low priority (both low performance and importance)	Library facilities Gymkhana and sports facilities Co-curricular and extracurricular activities
IV	Concentrate Here (low performance but high importance)	College & Classroom Infrastructure Canteen facilities Administrative function

Based on Matrix 3 and Table no. 5, it is observed that Quadrant I includes two dimensions (viz. Teaching staff and Examinations and Evaluation). Quadrant II includes two dimensions (Computer lab facilities and Curriculum/ Course structure). Quadrant III with both low performance and low importance dimensions includes Library facilities, Gymkhana and sports facilities as well as Co-curricular and extracurricular activities. Top priority dimensions such as College & Classroom Infrastructure, Canteen facilities and Administrative functions are in Quadrant IV.

Importance Performance Analysis- Second Year Students

Next, we prepare IPA matrix considering responses of second year students.

Matrix 4: Importance – Performance Analysis- Second Year Students

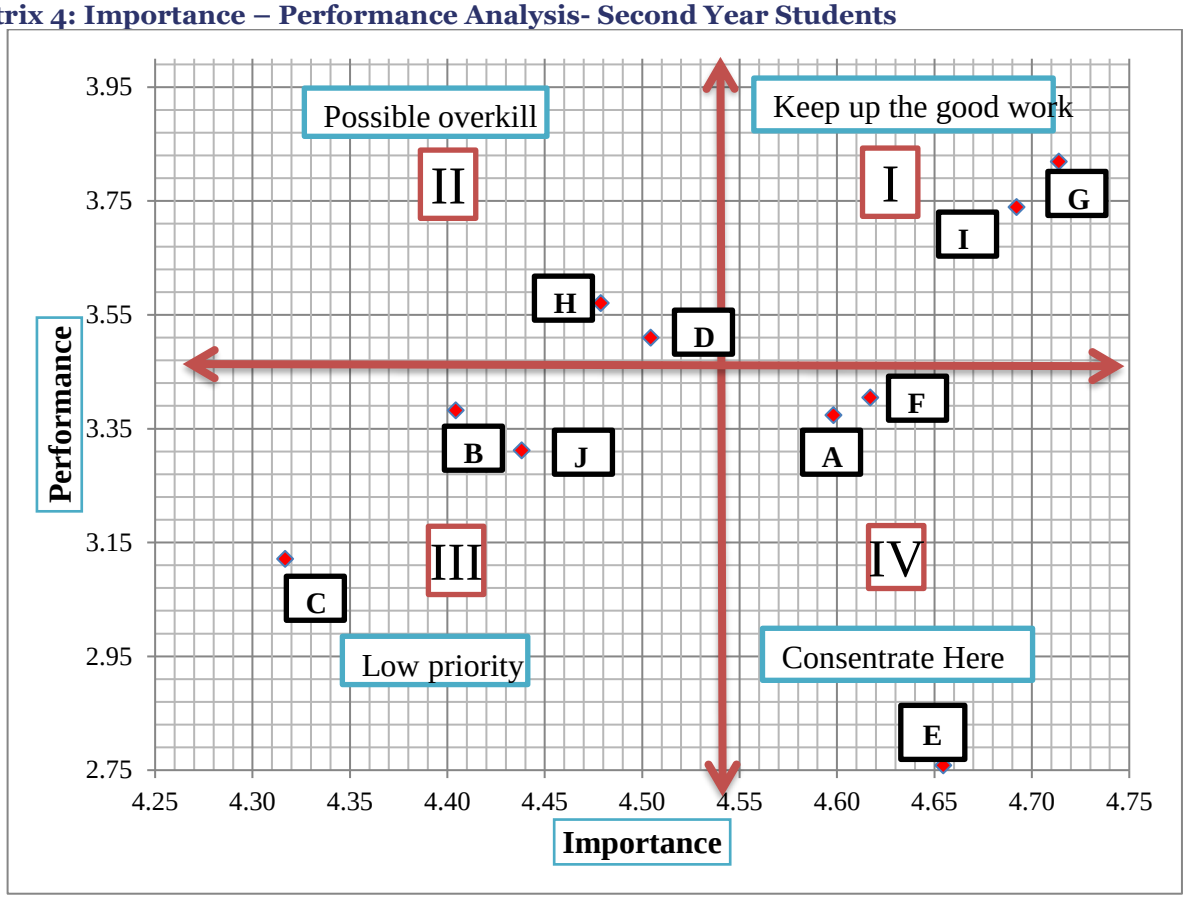


Table no. 6 Importance Performance Analysis- Second Year Students

Quadrant		Dimensions
I	Keep up the good work (both high performance and importance)	Teaching staff Examinations and Evaluation
II	Possible overkill (high performance but low importance)	Computer lab facilities Curriculum/ Course structure
III	Low priority (both low performance and importance)	Library facilities Gymkhana and sports facilities Co-curricular and extracurricular activities
IV	Concentrate Here (low performance but high importance)	College & Classroom Infrastructure Canteen facilities Administrative function

Based on Matrix 4 and Table no. 6, it is observed that Quadrant I includes two dimensions (viz. Teaching staff and Examinations and Evaluation). Quadrant II includes two dimensions (Computer lab facilities and Curriculum/ Course structure). Quadrant III with both low performance and low importance dimensions includes Library facilities, Gymkhana and sports facilities as well as Co-curricular and extracurricular activities. Top priority dimensions such as College & Classroom Infrastructure, Canteen facilities and Administrative functions are in Quadrant IV.

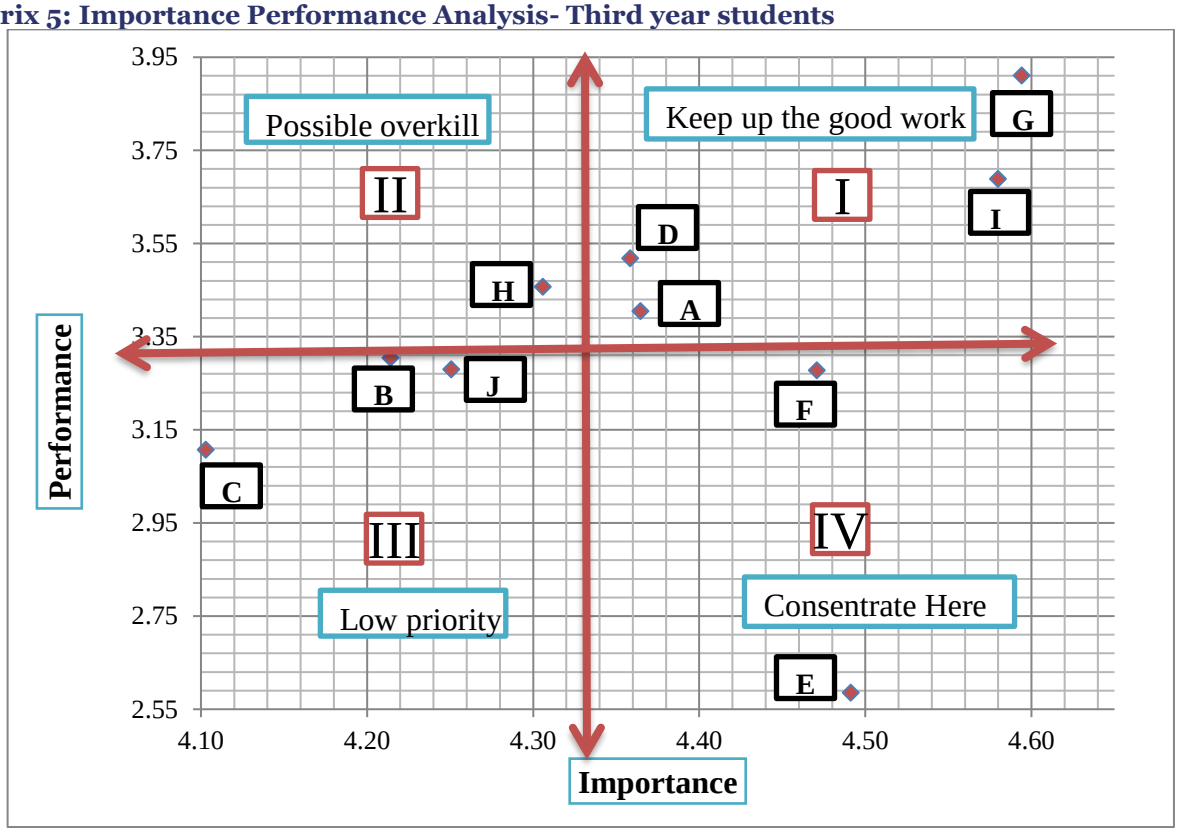
Importance Performance Analysis- Third Year Students

Next, we prepare IPA matrix and table considering responses of third year students.

Table no. 7 Importance – Performance Analysis- Third Year Students

Quadrant		Dimensions
I	Keep up the good work (both high performance and importance)	Teaching staff Examinations and Evaluation
II	Possible overkill (high performance but low importance)	College & Classroom Infrastructure Computer lab facilities Curriculum/ Course structure
III	Low priority (both low performance and importance)	Library facilities Gymkhana and sports facilities Co-curricular and extracurricular activities
IV	Concentrate Here (low performance but high importance)	Canteen facilities Administrative function

Matrix 5: Importance Performance Analysis- Third year students



Based on Matrix 5 and Table no. 7, it is observed that Quadrant I includes two dimensions (viz. Teaching staff and Examinations and Evaluation). Quadrant II includes three dimensions (College & Classroom Infrastructure, Computer lab facilities and Curriculum/ Course structure). Quadrant III with both low performance and low importance dimensions includes Library facilities, Gymkhana and sports facilities as well as Co-curricular and extracurricular activities. Top priority dimensions such as Canteen facilities and Administrative functions are in Quadrant IV.

Hypothesis Testing

Hypothesis 1:

H0: There is no significant difference in mean of importance and performance values for educational institutes.

H1: There is significant difference in mean of importance and performance values for educational institutes.

Initially, normality of data is necessary to decide appropriate statistical test of significance. According to Mendes and Pala (2003), Shapiro-Wilk (1965) test is the most powerful normality test used for sample size n>50. Hence, we use Shapiro-Wilk (1965) test of normality.

Table 8: Shapiro-Wilk Normality test

	p value		p value
Importance	0.000	Performance	0.021

From Table 8, it is seen that significant p values are < 0.05 which indicates that data for each dimension is not normally distributed. Hence, we use non-parametric test i.e. Wilcoxon Signed Rank test.

Table 9: Wilcoxon Signed Rank test

Null Hypothesis	p value
The median of difference between Importance and Performance equals 0	0.00

From Table 9, it is seen that significant p value is < 0.01 indicating rejection of null hypothesis. ***Hence, we may infer that there is significant difference in importance and performance values for educational institute.***

Hypothesis 2:

H0: There is no significant difference in each mean importance and performance dimension for educational institutes.

H1: There is significant difference in each mean importance and performance dimension for educational institutes.

Normality test:

Results of Shapiro-Wilk (1965) test of normality are given below:

Table 10: Shapiro-Wilk Normality test

Dimension	p value	Dimension	p value
I -College & Classroom Infrastructure	.000	P -College & Classroom Infrastructure	.008
I- Library facilities	.000	P- Library facilities	.000
I - Gymkhana and sports facilities	.000	P - Gymkhana and sports facilities	.000
I - Computer lab facilities	.000	P - Computer lab facilities	.000
I - Canteen facilities	.000	P - Canteen facilities	.000
I - Administrative function	.000	P - Administrative function	.000
I - Teaching staff	.000	P - Teaching staff	.000
I - Curriculum/ Course structure	.000	P - Curriculum/ Course structure	.000
I - Examinations and Evaluation	.000	P - Examinations and Evaluation	.000
I - Co-curricular and extracurricular activities	.000	P - Co-curricular and extracurricular activities	.000

From Table 10, it is seen that all significant p values are < 0.01 which indicates that data for each dimension is not normally distributed. Hence, we use non-parametric related sample Wilcoxon Signed Rank test for testing the significance of data.

Hypothesis test summary:

Table 11: Wilcoxon Signed Rank test

Null Hypothesis	P value	Decision
The median of difference between I -College & Classroom Infrastructure and P -College & Classroom Infrastructure equals 0	0.00	Reject the null hypothesis
The median of difference between I- Library facilities and P -Library facilities equals 0	0.00	Reject the null hypothesis
The median of difference between I -Gymkhana and sports facilities and P -Gymkhana and sports facilities equals 0	0.00	Reject the null hypothesis
The median of difference between I -Computer lab facilities and P -Computer lab facilities equals 0	0.00	Reject the null hypothesis
The median of difference between I -Canteen facilities and P -Canteen facilities equals 0	0.00	Reject the null hypothesis
The median of difference between I -Administrative function and P -Administrative function equals 0	0.00	Reject the null hypothesis
The median of difference between I -Teaching staff and P -Teaching staff equals 0	0.00	Reject the null hypothesis
The median of difference between I -Curriculum/ Course structure and P -Curriculum/ Course structure equals 0	0.00	Reject the null hypothesis
The median of difference between I -Examinations and Evaluation and P -Examinations and Evaluation equals 0	0.00	Reject the null hypothesis
The median of difference between I -Co-curricular and extracurricular activities and P -Co-curricular and extracurricular activities equals 0	0.00	Reject the null hypothesis

From Table 11, it is seen that all significant p values are < 0.01 indicating rejection of null hypothesis in all cases.

Hence, we may infer that there is significant difference in each mean importance and performance dimension for educational institutes.

Hypothesis 3

H0: The distribution of Importance and Performance is same across categories of gender.
H1: The distribution of Importance and Performance is different across categories of gender.

Normality test:

Results of Shapiro-Wilk (1965) test of normality are given below.

Table 12: Shapiro-Wilk Normality test

Parameter	Gender	P value	Parameter	Gender	P value
Importance	Male	0.000	Performance	Male	0.000
	Female	0.000		Female	0.824

From Table 12, it is seen that both significant p values for Importance are < 0.01 indicating that both data sets are not normally distributed. Also, significant p value for male performance data is < 0.01 and that of female is > 0.05 indicating that data for male data sets are not normally distributed but that for female is normally distributed. Hence, we use non-parametric independent sample Mann-Whitney U test for testing the significance of data.

Table 13: Mann-Whitney U test

Null Hypothesis	p value
The distribution of Importance is same across categories of gender.	0.030
The distribution of Performance is same across categories of gender.	0.097

From Table 13, it is seen that

1. significant p value for importance is 0.030 (< 0.05) indicating rejection of null hypothesis. ***Hence, we may infer that the distribution of importance is different across categories of gender of educational institutes.***
2. significant p value for performance is 0.097 (> 0.05) indicating null hypothesis is retained. ***Hence, we may infer that the distribution of performance is same across categories of gender of educational institute.***

Hypothesis 4

H0: The distribution of Importance and Performance is same across second and third year students.

H1: The distribution of Importance and Performance is different across second and third year students.

Normality test:

Results of Shapiro-Wilk (1965) test of normality are given below.

Table 14: Shapiro-Wilk Normality test

Parameter	Year	P value	Parameter	Year	P value
Importance	Second	0.000	Performance	Second	0.045
	Third	0.000		Third	0.272

From Table 14, it is seen that both significant p values for Importance are < 0.01, indicating that data for both data sets are not normally distributed. Also, significant p values for second year students' performance data is < 0.01 and that of third year is > 0.05 which indicates that data for second year student data sets are not normally distributed but that for third year student is normally distributed. Hence, we use non-parametric independent sample Mann-Whitney U test for testing the significance of data.

Table 15: Mann-Whitney U test

Null Hypothesis	p value
The distribution of Importance is same across categories of year.	0.000
The distribution of Performance is same across categories of year.	0.289

From Table 15, it is seen that

1. significant p value for importance is 0.00 (< 0.01) indicating rejection of null hypothesis. ***Hence, we may infer that the distribution of importance is different across categories of year of educational institute.***
2. significant p value for importance is 0.289 (> 0.05) indicating null hypothesis is retained. ***Hence, we may infer that the distribution of performance is same across categories of year of educational institute.***

Conclusion and Recommendation

The present research uses Importance Performance Analysis (IPA) to understand the importance given to various service quality attributes by students as well as their perception of the performance of the educational institution in those attributes. The results of the study show that students regard canteen facilities and administrative facilities as important attributes while judging service quality of an educational institution. Female students and second year students also regard college and classroom infrastructure as highly

important. However, since the performance of the institution with regards to these attributes is low, the college should concentrate on improving the service quality in these areas. The students are satisfied with the performance of the college in attributes such as teaching staff and examinations and evaluations which they consider as important. However, students do not place much importance on curriculum and course structure, which could point to their ignorance about the importance of a student-centric and well-rounded curriculum in their holistic development as well as future employability. The college, being autonomous, has the flexibility to introduce innovations in its curriculum but the same must be communicated to the students. Students also do not place importance on attributes such as library facilities, gymkhana and co-curricular and extra-curricular activities. Hypothesis testing shows that the distribution of importance is different across categories of gender as well as year but distribution of performance is the same.

This study can be used by the educational institution to allocate their resources effectively so that more focus is on areas where the performance of the college is not satisfactory vis-a-vis the high importance given by students to those areas (i.e. Quadrant IV). The college can divert resources from attributes which are not important from the students' point of view such as gymkhana and co-curricular and extra-curricular activities (i.e Quadrant II).

The main limitation of the study is that it is confined to second and third year under-graduate students of only one autonomous college in the western suburbs of Mumbai. However, despite these limitations, this study can be used in other autonomous colleges as well as to post-graduate students to get an idea about service quality attributes from students' point of view. Also, other methods to identify attributes of service quality such as conjoint analysis can be taken up for further study.

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