

Identifying Student Perception In Higher Education Institution Choice: An Exploratory Data Analysis

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Abstract:

Background: Education directly affects the development of any society as society is always closely related to the education delivered in that society. As economic growth of a nation or a country is also driven by the knowledge and due to which knowledge development has acquired a lot of significance. Higher education and education providers are very important as inventor and supplier in education system for knowledge. Higher Education within reach is very significant and useful for the development of the economy by creating and spreading knowledge. All India Survey on Higher Education (AISHE) 2020-21 show the number of universities has increased by 70, and the number of colleges has increased by 1453 in 2020-21 over 2019-20 with the increasing number of institute. The institute and university competition has grown stronger. So the students have wide range of choice for selection of their higher education institutions. Therefore, the study was undertaken to understand the factors that students consider while selecting the institution so does the institute can offers their service according.

Materials and Methods: In this exploratory study sample size of 50 students from Delhi and NCR were selected through convenience sampling. The students were undergraduates from management and computer science. A structured questionnaire were made and circulated via Google form. The collected data was analyzed using python. Cronbach's alpha test was used to test the reliability and KMO and Bartlett's test used for factor analysis. PCA was used for exploratory factor analysis and Confirmatory factor analysis was carried out. The output is presented through table and charts.

Results: According to this study while choosing HEIs students are mainly focused on career outcomes, faculty excellence, Academic facilities, Institutional performance, Financial Factors and Institutional Engagement. During the study it is found that Most of the Students are attracted towards good placement records type of company visited the campus, package offered.

Conclusion: The five factors model which is appropriate and will assist students in their choice of higher education institutions. This is also helpful for the higher education institutions to focus on the main factors that students find most appealing to decision-making.

Key Word: Education, Factors, HEI's (Higher Education Institution), EFA (Exploratory Factor Analysis), CFA (Confirmatory Factor Analysis)

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I. Introduction

Education directly affects the development of any society as society is always closely related to the education delivered in that society. As economic growth of a nation or a country is also driven by the knowledge and due to which knowledge development has acquired a lot of significance. Development of society depends on knowledge creation and its use, knowledge creation and development are only depend on quality and quantity of educational facility available especially on higher education in the country. Therefore higher education and education providers are very important as inventor and supplier in education system for knowledge. Higher Education within reach is very significant and useful for the development of the economy by creating and spreading knowledge.

No doubt these days there is better availability of higher education as compared to the past as there has been significant rise in the number of colleges across the globe in past decades. For Example All India Survey on Higher Education (AISHE) 2020-21 show the number of universities has increased by 70, and the number of colleges has increased by 1453 in 2020-21 over 2019-20 with the increasing number of institute. The institute and university competition has grown stronger. To survive in this developing environment they have to take competitive advantage.

To provide quality education to the students Higher Education institute need to work hard in terms to foresee and react to the needs of the students. HEI's needs to consider the factors which are important and

consider by students while selecting the institute. This is one way to successfully develop and run higher education institute. So the aim of the study is to fill the gap by identify and exploring the factors that affects the student choice of Institute.

II. Literature Review

A large body of literature exists on the many aspects that students consider while selecting a higher education institution or university. This topic has been studied extensively, both in India and around the world. This section seeks to summarize the important finding from such studies. In turkey, high school students examine a variety of factors while choosing a university, including tuition costs, language of instruction, location, and academic reputation. According to [1], while tuition fees are a major concern for students attending state colleges, those attending private institutions place a premium on academic quality. One of the most important factors in a student's decision-making process is the institute's placement record. Additional significant elements are robust infrastructure and qualified faculty, referrals from friends and family [4]. In contrast, factors such as county of study and social influence tend to have little influence when choosing a foreign university [3]. Furthermore, [2] discovered that female students are more likely to attend college that offer student exchange program than their male counterparts. Researchers have also investigated what factors contribute to student satisfaction throughout their first year of college.

According to the finding, boosting involvement in academic and extracurricular activities, as well as assisting students in building presentation skills, greatly improves satisfaction [5].

When choosing an institute, students consider a variety of factors such as placement services, computer laboratories, peer and family recommendations, course and specialization offerings, the institution's reputation, and location [6], [7]. Underlined that choosing a college is a difficult process in which students carefully consider a variety of criteria before making a final decision [8]. Explored the numerous institutional elements that influence students' decision while choosing a higher education institution key impacts included that institute location, and reputation, educational facility quality, tuition cost, job placement possibilities, promotional activities campus visits and outreach attempt by college officials in schools.

According to [5] undergraduate students' satisfaction is highly related to their ability to access enough resources that support both their academic and social development objectives. In [9] it is observed that international students ultimate decision on which school to attend is influenced by a variety of factors, including personal motives, perceptions, of the country and city, the institution's image, and the perceived quality of the academic program.

The exploratory data analysis is discussed utilizing various visualization techniques [10]. According to the work done in [11] the most important parameters as per student perception based on questionnaire are quality in higher education process, teaching staff, kindness of administrative staff, availability of teachers in HEI's and quality of study programs. As per study they consider students as a user of HEI's and not as active partners which influences the HEI's Selection decision.

Undergraduate Student Satisfaction is influenced by the availability and ability to access resources which help them in accomplishing academic and social objectives.

III. Study Objective

The study's major goal was to determine the key elements that influence students' decisions about which higher education institution or university to attend. Higher education institutions should pay particular attention to the five important variables highlighted, as these aspects have the potential to dramatically improve service quality and student happiness. Maintaining good service standards is crucial in today's competitive climate, with the number of higher education institutions continually expanding. Any reduction in quality may lead to students choosing colleges in other regions due to inadequate infrastructure and support services. As a result, these five characteristics provide useful guidance for students while deciding on a college or university.

IV. Research Methods

The current study uses primary data gathered via a structured questionnaire and employs an exploratory research methodology. The art of crating the questionnaire items involved compiling a list of statements or items based on an analysis of the body of research in order to pinpoint the main elements that affect students' choice of colleges and universities. A selection of items was kept for additional study based on the respondents' feedback. To find and validate the underlying construct, the gathered data were then put through both exploratory and confirmatory factor analysis. A selection criterion was used to assess an item's appropriateness on a seven point Likert scale, at least 60% of respondents had to indicate agreement or strong agreement with the statement.

The following items were chosen for additional examination in order to guarantee that only those items that were deemed favorable by the majority were regarded as representative of students' preference.

The sample size is 250. The data was collected through google form. The sample was selected through convenience sampling and the respondents were from computer science and Management program from Delhi & NCR region

Table No. 1: Summary of initial items used in earlier studies

S.No.	Item Description	Source of Item
1	Good Campus placement record	Rajput and Chauhan(2021)
2	Top Salary Package offered	Rajput and Chauhan(2021)
3	Academic & Career Support	Item generated for this study
4	Total Graduate Placed	Item generated for this study
5	Teaching-Learning Ecosystem	Rajput and Chauhan(2021)
6	Availability Well-equipped laboratories	Fahriye Uysal(2015)
7	Transportation Services	Fahriye Uysal(2015)
8	Well-equipped class	Fahriye Uysal(2015)
9	Convenient working hours of library	Fahriye Uysal(2015)
10	Availability of journals and newspapers	Fahriye Uysal(2015)
11	Adequate working hours by staff	Rajput and Chauhan(2021)
12	Financial Feasibility	Item generated for this study
13	Academic Exposure	Item generated for this study
14	Sports facility	Lucie Depoo et al.(2017)
15	Annual fest	Lucie Depoo et al.(2017)
16	Academic qualification of faculties	Fahriye Uysal(2015)
17	Communication skills	Rajput and Chauhan(2021)
18	Teaching methodology of faculties	Rajput and Chauhan(2021)
19	Spatial Convenience	Item generated for this study
20	Timely communication by staff	Lucie Depoo et al.(2017)
21	Efficient and effective service of staff	Lucie Depoo et al.(2017)
22	Proper guidance by staff	Lucie Depoo et al.(2017)
23	Canteen facility	Lucie Depoo et al.(2017)
24	Medical facility	Fahriye Uysal(2015)
25	Professional experience of faculties	Fahriye Uysal(2015)
26	Approachability of faculties	Fahriye Uysal(2015)
27	Friendliness of staff	Rajput and Chauhan(2021)
28	Hostel facility	Fahriye Uysal(2015)
29	Availability of textbook	Fahriye Uysal(2015)
30	E-Library	Fahriye Uysal(2015)
31	Quality of course content	Fahriye Uysal(2015)
32	Area in which institute is located	Fahriye Uysal(2015)

V. Data Analysis

Exploratory Factor Analysis

EFA, a statistical technique used in research to find underlying structure of a variable observed during the study. EFA is used to identify factors that may not be directly measured but can be reflected in a certain pattern. EFA simplifies the data sets and enhances the reliability and validity of measurement instruments, playing an important role in the development of questionnaires, surveys, and other research tools. Large sample size is used for better results [e.g., sample size of at least 200]. EFA is normally used for large sample size (N) with N=50 as a reasonable absolute minimum [12].

EFA test is applied using python. To reduce the observed variables and constitute a small set of variables. As per [13] factor loading more than 0.5 has practical significance as <0.30 weak loading (Not meaningful). 0.30-0.49 & moderate loading. 0.50-0.69 strong loading. >0.70 very strong loading. So factors having strong loading below 0.5 were deleted. Varimax rotation in factor analysis using python is applied to avoid cross loading. It has been observed that five Constructs were found, after evaluating the values at several stages in 10 iterations.

KMO value is .954, [13] suggested value >0.5 is acceptable, but more than 0.5 and 0.7 are mediocre whereas value between 0.7 and 0.8 are good. In total, the variance explained by the above mentioned factors is 71.3% which is good.

Reliability Analysis

Cronbach's alpha finds the reliability of various variables. As per Selltiz et. al. (1976) it covers estimates of the amount of variance in scores of different variables. The 0.70 alpha value for each variable indicates that the consistency is correct. [13] The Cronbach's alpha value for our study is 0.85. Thus, it is reliable for further study

Table no 1 Exploratory factor Analysis

Variables	Communalities	Percentage of Variance Explained	Mean Score	Std. Deviation	Factor Loadings	Cronbach's Alpha
Factor 1: Academic and career support						
V7(Placement)	.730	25.1%	5.87	1.30	.757	0.955
V8(Past Placement)	.692		5.42	1.57	.701	
V9 (Placement sector)	.690		5.36	1.33	.690	
V10 (Job Opportunities)	.674		5.67	1.24	.669	
V11(Industrial Exposure)	.694		5.35	1.38	.585	
V14 (Campus Facility)	.675		5.24	1.34	.531	
V15 (Library)	.655		5.14	1.34	.573	
V19 (Classroom)	.754		5.37	1.35	.631	
V20 (Tools & Technology)	.802		5.50	1.37	.763	
V21(Faculty Quality)	.768		5.57	1.38	.736	
V22(Faculty Experience)	.670		5.32	1.36	.585	
V23 (Faculty Knowledge)	.715		5.48	1.35	.696	
V29 (Course Offered)	.615		5.16	1.29	.508	
V38 (Entrance Exam)	.638		5.34	1.46	.630	
Factor 2: Teaching and Learning Eco-system						
V16 (Book Bank facility)	.664	23.6%	4.90	1.39	.625	0.946
V17 (Computer Lab)	.734		5.44	1.41	.593	
V24 (Teaching Padagogy)	.692		5.26	1.39	.588	
V25(College Environment)	.740		5.10	1.43	.797	
V26 (MOU)	.673		4.97	1.46	.722	
V27 (Practical Training)	.785		5.25	1.34	.720	
V28 (Guest Lecture)	.715		4.98	1.38	.675	
V30 (Additional Course)	.707		5.14	1.41	.747	
V31(Elective Offered)	.766		5.16	1.39	.755	
V32 (Result)	.673		5.08	1.33	.587	
Factor 3: Economic Consideration						
V2 (Fees)	.741	9.7%	4.96	1.55	.816	0.813
V3 (other Expenses)	.761		5.03	1.55	.829	
V39(Parents Financial Status)	.699		5.11	1.49	.605	
Factor 4: Academic Exposure						
V12 (Seminar)	.752	7.9%	4.73	1.43	.786	0.753
V13 (Events)	.743		5.03	1.28	.570	
Factor 5: Spatial Convenience						
V4 (Location of College)	.773	4.9%	4.87	1.53	.611	0.783
V5 (Distance from college)	.700		4.76	1.66	.690	

Note. The value computed reflect the Percentage of Variance, Mean Score, Std. Deviation, Factor Loadings, Cronbach's Alpha values of the variable under each construct based on the survey for determine students choice while selecting HEI's.

Table no 2 Total Variance Explained

Factor	Eigenvalue	Percentage of Variance Explained	Cumulative Percentage of Variance Explained
Factor 1	7.782	25.1	25.1
Factor 2	7.318	23.6	48.7
Factor 3	3.009	9.7	58.4
Factor 4	2.450	7.9	66.3
Factor 5	1.530	4.9	71.2

Table no 3 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.954
Bartlett's Test of Sphericity	Approx. Chi-Square	6514.859
	Df	465
	Sig.	.000

Overall KMO value =.954 based on above survey Findings.

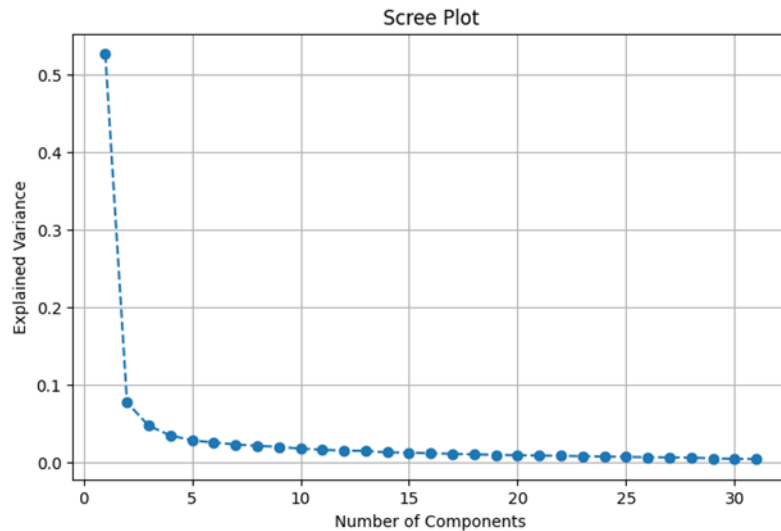


Figure no 1 Scree Plot

Table no 4 Confirmatory Factor Analysis

Construct & Items Description	SFL	EV	Cronbach's Alpha	CR	AVE	SMC
Factor 1: Academic and career support						
V7 (Placement)	0.873	0.141	0.955	0.843876	0.696294	0.488
V8(Past Placement)	0.881	0.139				0.473
V9 (Placement sector)	0.863	0.262				0.505
V10(Job Opportunities)	0.815	0.164				0.579
V11(Industrial Exposure)	0.873	0.144				0.488
V14 (Campus Facility)	0.872	0.243				0.490
V15 (Library)	0.852	0.265				0.524
V19 (Classroom)	0.873	0.147				0.488
V20 (Tools & Technoogy)	0.891	0.213				0.454
V21(Faculty Quality)	0.891	0.217				0.454
V22(Faculty Experience)	0.783	0.298				0.622
V23 (Faculty Knowledge)	0.891	0.165				0.454
V29 (Course Offered)	0.873	0.296				0.488
V38 (Entrance Exam)	0.842	0.294				0.539
Factor 2: Teaching and Learning Eco-system						
V16 (Book Bank facility)	0.873	0.145	0.946	0.840155	0.723955	0.488
V17 (Computer Lab)	0.861	0.246				0.509
V24 (Teaching Padagogy)	0.863	0.264				0.505
V25(College Enviroment)	0.852	0.265				0.524
V26 (MOU)	0.872	0.287				0.490
V27 (Practical Training)	0.815	0.243				0.579
V28 (Guest Lecture)	0.873	0.345				0.488
V30 (Additional Course)	0.801	0.248				0.599
V31(Elective Offered)	0.802	0.197				0.597
V32 (Result)	0.891	0.196				0.454
Factor 3: Economic Consideration						
V2 (Fees)	0.895	0.198	0.813	0.801807	0.702364	0.446
V3 (other Expenses)	0.821	0.325				0.571
V39(Parents Financial Status)	0.795	0.367				0.607
Factor 4: Academic Exposure						
V12 (Seminar)	0.857	0.265	0.753	0.734854	0.680857	0.515
V13 (Events)	0.792	0.272				0.611
Factor 5: Spatial Convenience						
V4 (Location of College)	0.854	0.27	0.783	0.729815	0.716619	0.520
V5 (Distance from college)	0.839	0.25				0.544

Table no 5 Five Factor Model

Model	Cmin	Df	Cmin/df	p-value	GFI	NFI	TLI	CFI	RMSEA
Five Factor Model	1220	465	2.62	.000	0.821	0.822	0.863	0.875	0.08705

The five factor model was discovered showing student preferences while selecting HEI's. RMSEA=Root Mean Square Error of Approximation Index; GFI= Goodness of Fit Index; NFI= Normed Fit Index; TLI= Tucker-Lewis Index; CFI= Comparative Fit; calculations are based on survey.

VI. Discussion

According to this study while choosing HEIs students are mainly focused on career outcomes, faculty excellence, Academic facilities, Institutional performance, Financial Factors and Institutional Engagement. During the study it is found that Most of the Students are attracted towards good placement records type of company visited the campus, package offered. According to [14] Brand image, quality teaching and placement, references, personal factors and reputation of university are the six factors that students consider while selecting HEIs, well-equipped library, college working hours and co-curricular activities are also considered by students. As per [15] the basic thing that affect the library quality services is availability of textbooks and journals. Students preferred institutions with well-equipped Classrooms, labs and library also they give importance to Subject Content and possibilities of using knowledge in solving real world problem. [14]

Students respect faculty with expertise in their academic background, teaching methods, and communication skills as they believe faculty knowledge and abilities will help them in developing their knowledge and flourish their future.

As per [16] most of students feel satisfied with Faculty having expertise and proficiency in their field. Student also concern about Campus Security and safety, the industrial exposure cost of the program. They also take feedback from friends and their Siblings who have studied there.

VII. Conclusion

The finding of this study suggested the five factors model which is appropriate and will assist students in their choice of higher education institutions. This is also helpful for the higher education institutions to focus on the main factors that students find most appealing to decision-making. This study is equivalent to earlier research conducted by [12] [13] [14] It is found that [15] in Bangladesh students give priority to quality education in comparison to other factors.

As per [16] curriculum has the least importance for students whereas the reputation of college is the most important factor. The output of the study reflects that students consider Number of factors before selecting HEIs, study will help institutions also to improve their quality of services by keeping in mind students Consideration for selecting HEIs

Policy Implication: - so it become important for HEIs and universities to understand what students are expecting while considering their institutions or universities for registration. Despite annual increase in numbers of private colleges and universities offering higher education by ignoring student expectation They are leading to deterioration in future, HEIs should be consider Students selection Criteria to survive in this Competitive world. As they are already familiar with traditional services. [15] Institute management may be added 'must' think what student wants will help them to ensure better service in the right direction.

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