Students Expectations using Opinion Mining Clustering

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Abstract*: Students and their parents have become more and more aware of the importance of gaining higher education in India. Government of India, as well as state governments, has been framing various policies to promote higher education in various fields such as engineering, management, and hotel management, medical and allied disciplines. An attempt has been made to analyze the expectations of students pursuing higher education in the state of Punjab and Haryana in India. For this, Clustering approach has been used. Students studying in selected engineering colleges have been approached. Two clusters have been evolved: Career-Oriented Students and Society Conscious Students. This research gives further directions for the future as the same can be conducted in other institutes and in other cities, states, and countries too.

***Index Terms*: Students, Higher Education, Engineering, Career, Social, Fun, Clustering Analysis.**

I. INTRODUCTION

The largest higher education system in the world is in India and student enrolment in higher education provides India second rank with the enrollment of 36.64 million students in higher education in 2017-18 (IBEF, April 2019). Importance of higher education has been realized throughout the world besides the preliminary requirement of basic education. As a result, campus placement is becoming competitive and role of quality faculty is realized (H. Malini and L. Suresh, 2018). H. Afzal, I. Ali, M. A. Khan and K. Hamid (2010) also emphasized the role of best teachers, bright students and best schooling in academic performance, motivation, and accomplishment of students. For performance analysis and gap identification, the feedback has been considered as an important factor in educational institutions (A. Chitriv and A. Thomas, 2018). One application of data mining is Educational data mining with student and faculty as two key domains (P. Ughade and S.W. Mohod, 2016).

A. Basic Terminology

A Cluster refers to a group of similar kind of objects.

Hierarchical Clustering Method creates a hierarchical disintegration of data objects in the given set.

Students' satisfaction with a course and their willingness to engage in certain activities will depend in part on how well the instructor's definition of what is happening in the classroom aligns with their own (Augusta University), Objective of the study

The objective of the study undertaken is:

- "To determine how students' expectations rate on professional institute evaluation for better higher education environment".

II. PROCEDURE FOR PAPER SUBMISSION REVIEW OF LITERATURE

Atta-Ur-Rahman, K. Sultan, N. Aldhafferi and A. Alqahtani (2018) aimed to discover the trend of the comfort level of students with respect to timetabling and teaching techniques. H. Kaur and G. Bathla (2018) briefly described the data mining techniques. The literature review of educational data mining is also done. This paper, implemented data mining techniques such as Naive Bayes and Support vector machine to predict the student performance. V. Dahiya (2018) presented a survey on various components of educational data mining along with its objectives.

RESEARCH METHODOLOGY

The study undertaken is focused on analyzing college student expectations. The questions related to respondents' demographics were based on research conducted by H. Afzal, I. Ali, M. A. Khan and K. Hamid (2010). The instrument was designed using "The University Student Motivation and Satisfaction Questionnaire version 2". (TUSMSQ2) instrument developed by Neill (2004) to measure student's motivation contains 30-items.

CLOSED ITEMS - FINAL FORMAT STUDENT MOTIVATION

	I attend university…
1	because I don't know what else to do.
2	to understand myself better.
3	to gain valuable skills for my career.
4	because its fun place to be.
5	because others expect me to get a degree.
6	because I genuinely want to help others.
7	because it's a better alternative than working.
8	because I want to explore new ideas.
9	to enhance my job prospects.
10	because I enjoy the social life.

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11	because other people have told me I should.
12	because I want to contribute to society.
13	to avoid being unemployed.
14	because I want to challenge myself.
15	in order to get the qualification.
16	because I enjoy the social environment.
17	because it would disappoint other people if I didn't.
18	because I want to help solve society's problems.
19	because it gives me something to do.
20	for my personal growth and development.
21	because it will help set up my future career.
22	because of the social opportunities.
23	it seems to be the recommended thing to do.
24	because I want to improve the world situation.
25	because I don't have any better options.
26	because I love learning.
27	so I can get a better job.
28	because its a great place to develop friendships.
29	of social expectations from those around me.
30	because I want to be more useful to society.

The survey included the following sections:

• Questions related to student demographics- Year of Study, and Programme of Study;

• 30 items to measure the motivations of college students to be a part of the college.

For data collection, relative to student expectations, the respondents were asked to indicate their degree of agreement or disagreement with each statement. The attribute items were measured on a 5-point Likert type scale of importance with 5 beings 'Strongly Agree' to 1 being 'Strongly Disagree'.

- **Sampling Design**: The Universe of the study comprised all adult farmers (above 18 years of age) residing in India. The Survey (Target) Population included all students pursuing higher education in the Sahibzada Ajit Singh Nagar (Mohali) District, Punjab State, India. The students who were willing to respond to the questionnaire could be contacted either at their place of study on working days during the semester or at their residence.

  The sampling design employed was non-probability judgment and convenience sampling. 150 respondents comprised the final sample.

- **Sample**: The students pursuing higher education.
- **Demographics**: Year of Study, and Programme of Study.

Table 1: Sample Frequencies of Students Pursuing Higher Education

Descriptive	**Frequency**	**Percentage**
Programme of Study		
Business Management (BM)	47	31
Engineering (EN)	50	33
Hotel Management (HM)	36	24
Education (ED)	17	12
Total	150	
Year of Study		
First Year (BM)	17	11
First Year (EN)	2	1
First Year (HM)	2	1
First Year (ED)	5	3
Second Year (EN)	6	4
Second Year (HM)	4	3
Third Year (EN)	12	8
Third Year (HM)	8	6
Final Year (BM)	30	20
Final Year (ED)	12	8
Final Year (EN)	30	20
Final Year (HM)	22	15
Total	150	
Gender		
Male (BM)	25	17
Male (EN)	34	22
Male (HM)	22	15
Male (ED)	14	10
Female (BM)	22	15
Female (EN)	16	10
Female (HM)	14	9
Female (ED)	3	2
Total	150	

The combined sample consisted of one-third (33%) of the respondents pursuing engineering, another one-third (31%), pursuing business management, whereas other 24% were pursuing hotel management and remaining 11% were enrolled in department of education. Of the students surveyed, nearly two-third were studying in final year (63%) and remaining one-third collectively in first (16%), third (14%) and second year (7%). Majority of the respondents were male (64%) and remaining were females (36%).

In summary the typical sample respondent profile can be described as follows:

The respondents were mainly male students pursuing final year in

engineering and management programmes.

STATISTICAL ANALYSIS

The study tested statistically the students' motives for educational institutes. The statistical significance was set at a level of 0.05.

Results and Findings of the Study

SPSS Statistics, 16.0.1 version, was used for performing Cluster Analysis. A new student typology, named as Career-Oriented Students and Society-Conscious Students, has been evolved. Higher education Professional Institute scenario based on profiling of students types was created. Profiling of students clusters based on students' expectations was done. A significant association between expectations and education motives was checked using the Pearson Correlation Coefficient. This indicates that educational motivation is directly proportional to student expectation.

The next stage of profiling included demographics and motive of receiving education variables. For cross-tabulating the data, a Chi-Square Test has been administered in order to profile the two segments. The statistically significant differences were found (Refer to Table 2).

Table 2: Frequencies of Students Pursuing Higher Education

Descriptive	Career Oriented Students (Cluster I)	Society Conscious Students (Cluster II)	Total Sample Frequency
Programme			
Business Management	28	19	47
Engineering	44	6	50
Hotel Management	29	7	36
Education	17	0	17
Total	118	32	150

Table 3 ***Programme of Study* Students Clusters***

Programme * Cluster Crosstabulation					
			Cluster		Total
			1.00	2.00	
Year	1.00	Count	28	19	47
		Expected Count	37.0	10.0	47.0
		% within Year	59.6%	40.4%	100.0 %
		% within Cluster	23.7%	59.4%	31.3%
		% of Total	18.7%	12.7%	31.3%
	2.00	Count	44	6	50
		Expected Count	39.3	10.7	50.0
		% within Year	88.0%	12.0%	100.0 %
		% within Cluster	37.3%	18.8%	33.3%
		% of Total	29.3%	4.0%	33.3%
	3.00	Count	29	7	36
		Expected Count	28.3	7.7	36.0
		% within Year	80.6%	19.4%	100.0 %
		% within Cluster	24.6%	21.9%	24.0%
		% of Total	19.3%	4.7%	24.0%
	4.00	Count	17	0	17
		Expected Count	13.4	3.6	17.0
		% within Year	100.0 %	0.0%	100.0 %
		% within Cluster	14.4%	0.0%	11.3%
		% of Total	11.3%	0.0%	11.3%
Total		Count	118	32	150
		Expected Count	118.0	32.0	150.0
		% within Year	78.7%	21.3%	100.0 %
		% within Cluster	100.0 %	100.0 %	100.0 %
		% of Total	78.7%	21.3%	100.0 %

Programme of Study: 1-Business Management, 2-Engineering, 3-Hotel Management, 4- Education; **Cluster** 1: Career-Oriented Students, 2: Society-Conscious Students

Result of the Chi-Square Test: *There is significant relationship between Programmes and Student Motivation and Satisfaction -based clusters* (χ^2_{cal} *= 17.491,* χ^2_{tab} *=19.920, df = 3, p-value = 0.001)*

Summary of Results of Chi-Square Tests of Independence on Student's Clusters

In summary, we can say that there is a statistically significant relationship between the higher education motives-based clusters (Career Oriented Students and Society Conscious Students) and the select demographic variable: Programme of Study.

III. DISCUSSIONS

- Students pursuing engineering and management are more career conscious than those pursuing hotel management and 'Education'.

Career Oriented Students and Society Conscious Students

Table 4: Segmentation Profiles of Students' Clusters

Characteristics	Career Oriented Students	Society Conscious Students
Higher Education motives	Focused in Gaining Higher Education	Unfocused in Gaining Higher Education
Occupation	18.7% Business Management 29.3% Engineering 19.3% Hotel Management 11.3% Education 60.0% Others 61.9% Retired	12.7% Business Management 4.0% Engineering 4.7% Hotel Management 0.0% Education 40.0% Others 38.1% Retired

Professional Institute Strategies for Creating Better Higher Education Environment among Students:
Despite various institute patronizing motives and education values, a pleasing educational atmosphere is expected to enhance perceptions of education service quality, and foster students' approach behaviour.

IV. CONCLUSION

It has been observed that many higher education institutes offering similar programmes are likely to come up and there will be stiff competition in the near future. Therefore, managing an institute offering professional higher education will be more challenging. Management needs to understand the changing mindset of the students and deliver quality services catering to the needs and expectations of students seeking admission to various programmes. Educational institutes not only cater to the career-oriented needs of the students but also focusing on the all-round development of students. It is high time that management needs to come up with a USP to create visibility in the educational institute to get the desired response from the prospects. The respondents include rural youth 18 years of age and above, the behavior of residents below 18 years may exhibit different behavior. The study covered only the respondents Iindulged in farming, remaining youth may exhibit different behaviour. The exploratory study was conducted in Mohali, Punjab, India; the farmers' perceptions and attitude might vary in other regions. The findings of the first objective of the study provide the basis for further research to be carried out in the same field with larger sample size, larger area, might be expanded across the boundaries, or could be applied to universities.

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