
Socio-Mathematical Analysis Using Garrett's Ranking for Identifying Facilities in Higher Education of Uttarakhand

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ABSTRACT

The development of any nation completely depends on the quality of human resources and through quality education, good human resources are generated. Education provides an opportunity for individuals to focus on social, cultural, moral, economic, and spiritual problems and leads to development by disseminating advanced knowledge and skills. The present state of the higher education system in Uttarakhand is complex and challenging. This study explores the tough challenges of maintaining the facilities of the college. The study is totally based on primary data, by collecting 500 respondents for our findings. This paper describes some of the facilities of colleges provided by Uttarakhand government. The concept describes the various facets of facilities in the colleges using statistical tool known as Garrett's Ranking Test.

Keywords: Higher Education, Facilities of Colleges, Garrett's Ranking Test.

1. INTRODUCTION:

Quality education is the demand of modern society and irrespective of the field, the demand for quality is everywhere. The meaning of quality education is to develop qualities or to include qualities in education so that students and the objectives of education can be achieved well. When work includes all the qualities (practical and theoretical) related to that work, then it is seen and understood as the quality of that work and this aspect is also there in education. When we talk about quality in education, then we will consider such education as a quality that gives the benefit of that education to the students. Quality education means such education which fulfills the objectives of its construction well. If we talk about the modern age, then it would be wrong to call the education of any country quality. The present education has failed to achieve its objectives. Quality education includes the education who understands the interest and abilities of the students in teaching-learning and fulfills the needs of the society and makes the students earn a living.

In the UNESCO conference held in 1993, 4 objectives of teaching-learning were set which are as follows-

Learning to Be - That is, to form the personality of individuals, to develop their social, economic, political, cultural qualities. To prepare the students in such a way that they can coordinate with the society according to the circumstances of the country. Students should be able to discharge their social duties well.

Learning to Do - According to UNESCO, the aim of education is not only to develop the cognitive

development of the students but also to emphasize the active development of the students. It considers students to learn by doing as permanent education and the same education is considered as quality education which is permanent and which students can use when needed.

Learning to Know - It means to know the knowledge, that is, the knowledge that students acquire, they should be aware of that knowledge, when and how to use it. It is also true that we can call any education quality only when that education helps the student to know anything.

Learning to Live Together - We can do the same education for quality education, which education teaches individuals to live together in society. The education which teaches to co-operate in all the works of the society, the same education can be called quality education.

To bring quality in education, the objectives of education must be constructed based on the physical, social, economic, cultural environment. It is very important to have a proper environment for learning and for that it is very important to make the environment around the students conducive for learning and education.

The quality of the education system is closely related to the facilities offered by the college. While a college must provide a good education, it must also provide the necessary facilities to its students to help them study better. Nowadays, student's opinions about all aspects of academic life are sought by educational institutions worldwide. Universities and Colleges become a place to provide services to fulfill the student's needs. Student's demand is at a higher level not only in the quality of teaching but also in the condition of facilities. Thus, a strategy of continuous improvement about service quality is very important, so the student's satisfaction survey is a powerful tool to improve the quality of student's life and learning. The measurement of student satisfaction can be useful to institutions to help them to pinpoint their strengths and identify areas for improvement. **In this research paper, the significant factor about facilities of Uttarakhand government colleges by applying Henry Garrett ranking technique for ordering method is used for determination.**

2. OBJECTIVE OF THE STUDY:

The purpose of this study is given as follows-

- To gather relevant information for the ranking analysis test.
- To explore the tough challenges of maintaining the facilities of the college.

3. DELIMITATION OF STUDY

- This study was confined to the Uttarakhand state only.
- In the present study, only government degree colleges of the Nainital district have been included.
- In the present study, only post graduation degree students were included.

4. CONCEPTUAL EXPLANATION:

I. Infrastructure Facilities

Buildings, classrooms, Good faculty, laboratories, and equipment, etc are crucial elements of learning environments in colleges and universities. There is strong evidence that high-quality infrastructure facilitates better instruction, improves student outcomes, and reduces dropout rates, among other benefits.

II. Library

An academic library refers to a library that supports a college or university. Colleges and universities may have more than one library. Colleges and universities should pay more attention to the provision of quality education at par with global standards. Establishing this concept in the education system will be of great benefit because with the amazing effort anyone will be able to access the books and get the required training from anywhere. In addition, with new content and books, the e-library can be updated easily.

III. Canteen

A canteen is a store that sells food and drinks at an institution like a camp, college, or military base. A college canteen must be situated within the campus or beside the campus of the college. The functions of college canteens are to provide a service to the college community provide a variety of nutritious and attractively presented food and drinks at a reasonable cost and reinforce classroom learning.

IV. Hostel Facilities

A hostel is a form of low-cost, short-term shared sociable lodging where guests can rent a bed, usually a bunk bed in a dormitory, with shared use of a lounge. Rooms can be mixed or single-sex and have private or shared bathrooms. A student hostel is a lodging facility that is designed to eliminate some of the financial burdens from adolescents. When staying in these facilities, which are also commonly referred to as youth hostels, individuals usually have to share rooms, toilets, and showers.

V. Toilet & Water Facilities

Safe drinking water, Toilet Facilities, sanitation and good hygiene are essential for health, survival, growth and development. Though, these basic needs are still a luxury for many of the world's college students. High incidences of infectious, communicable diseases are associated with low levels of sanitation, public hygiene, and poor quality drinking water. Government has primary duty for providing basic amenities for all peoples.

5. METHODOLOGY USED:

This research paper is based on our primary data with purposive sampling. The universe of the study is the Nainital district of Uttarakhand. We collected 500 post graduation students of government degree colleges located in Nainital districts as respondents for our findings. The Concept describes the various facets of facilities in the colleges. We are using statistical tool like Garrett's Ranking Test. This method of ranking is highly feasible which is used primarily to determine the significant factors from the respondent.

It measures student's satisfaction and priorities showing how satisfied the students are as well as what issues are important to them. The Garrett's ranking technique score conversion formula is given as follows -

Percent Position = $100 (R_{ij} - 0.5) / N_{ij}$

Where,

R_{ij} - Rank has given for the i th variable by the j th respondents.

N_{ij} - Number of variables ranked by j th respondents.

Using primary data, the responses were converted to numerical scores using the Garrett technique which is highly feasible to test the significant level. The Garrett score is shown in table 1.

Table 1: Garrett ranking conversion table

Percent	Score	Percent	Score	Percent	Score	Percent	Score
0.09	99	11.03	74	52.02	49	90.83	24
0.2	98	12.04	73	54.03	48	91.67	23
0.32	97	13.11	72	56.03	47	92.45	22
0.45	96	14.25	71	58.03	46	93.19	21
0.61	95	15.44	70	59.99	45	93.86	20
0.78	94	16.09	69	61.94	44	94.49	19
0.97	93	18.01	68	63.85	43	95.08	18
1.18	92	19.39	67	65.75	42	95.62	17
1.42	91	20.93	66	67.48	41	96.11	16
1.68	90	22.32	65	69.39	40	96.57	15
1.96	89	23.88	64	71.14	39	96.99	14
2.28	88	25.48	63	72.85	38	97.37	13
2.69	87	27.15	62	74.52	37	97.72	12
3.01	86	28.86	61	76.12	36	98.04	11
3.43	85	30.61	60	77.68	35	98.32	10
3.89	84	32.42	59	79.17	34	98.58	9
4.38	83	34.25	58	80.61	33	98.82	8
4.92	82	36.15	57	81.99	32	99.03	7
5.51	81	38.06	56	83.31	31	99.22	6
6.14	80	40.01	55	84.56	30	99.39	5
6.81	79	41.97	54	85.75	29	99.55	4
7.55	78	43.97	53	86.89	28	99.68	3
8.33	77	45.97	52	87.96	27	99.80	2
9.17	76	47.98	51	88.97	26	99.91	1
10.06	75	50	50	89.94	25	100	0

6.RANKING OF COLLEGE FACILITIES:

The government of Uttarakhand had made several efforts for the educational development of their people, lack of awareness, surrounding(environment)stress &fears,Lack of interest in education among children, lack of interest in education among parents, and the hilly location of the village etc. are the factors responsible for slow progress to enrolment in higher education.

To access the requiredfacilitiesfor the necessity of higher educations, 05 questions were asked to the respondent for answering within preferential order (Nij =5). The rank given by the respondentsis given below in the table.

Table 2:Ranking of college facilities

Code	Ranks	Infrastructure Facilities	Library Facilities	Canteen	Hostel Facilities	Toilet& Water Facilities	Total
1	Rank 1	143	118	82	45	119	507
2	Rank 2	126	115	88	70	106	505
3	Rank 3	95	112	91	97	103	498
4	Rank 4	72	92	115	121	97	497
5	Rank 5	64	63	124	167	75	493
	Total	500	500	500	500	500	2500

7.HENERY GARRETT RANKING METHOD:

Table 3 Preference and Ranking of College Facilities

Factors	Rank Given by the Respondents				
	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Infrastructure Facilities	143	126	95	72	64
Library Facilities	118	115	112	92	63
Canteen	82	88	91	115	124
Hostel Facilities	45	70	97	121	167
Toilet &Water Facilities	119	106	103	97	75
Total	507	505	498	497	493

I. The Percent Position and Garret Value

The Garret ranks were calculated by using the appropriate Garret Ranking formula. The Garret scores of each description is calculated and corresponding to each calculated value, (Percent position) convert it into Garrett value with the help of Table 1.

Table 4: Garrett Score

Rank (Rij)	100 (Rij - 0.5) / Nj, (Nj = 5)	Percent Position	Garrett Value
1	100 (1.00 - 0.5) / 5	10	75
2	100(2.00- 0.5)/5	30	60
3	100(3.00- 0.5)/5	50	50
4	100 (4.00 - 0.5) / 5	70	40
5	100(5.00- 0.5)/5	90	25

II. Calculation of Garret Value and Ranking

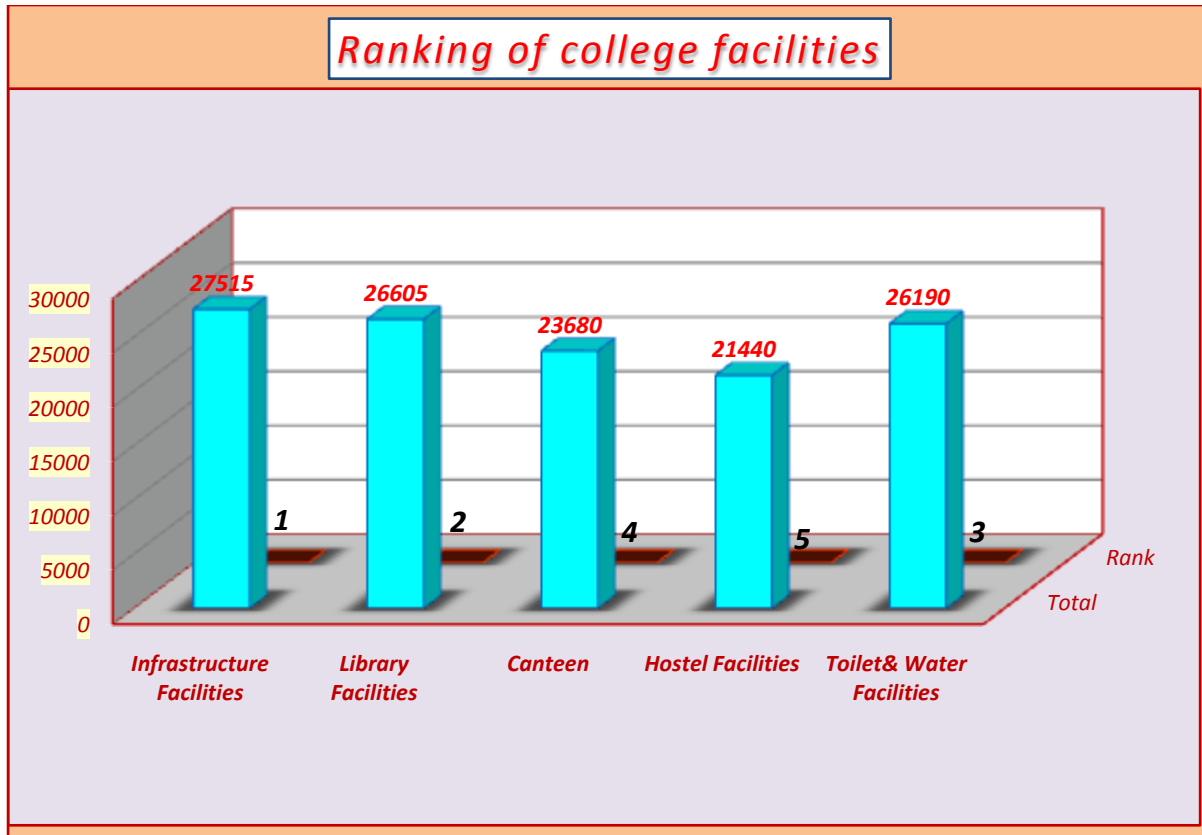
The calculation of Garret value and ranking of the Problems faced by the students for their higher educations are shown in the Table5and 6.

Table 5: Computation of the Garrett's Value

Factors	Rank1 *75	Rank 2 *60	Rank 3 *50	Rank4*4 0	Rank5 *25	Total
Infrastructure Facilities	10725	7560	4750	2880	1600	27515
Library Facilities	8850	6900	5600	3680	1575	26605
Canteen	6150	5280	4550	4600	3100	23680
Hostel Facilities	3375	4200	4850	4840	4175	21440
Toilet & Water Facilities	8925	6360	5150	3880	1875	26190
Total	38025	30300	24900	19880	12325	125430

Table 6: Ranking of College Facilities

Factors	Total	Total Average Score	Rank
Infrastructure Facilities	27515	27.52	1
Library Facilities	26605	26.60	2
Canteen	23680	23.68	4
Hostel Facilities	21440	21.44	5
Toilet & Water Facilities	26190	26.20	3



8. RESULTS AND DISCUSSION

From the above empirical survey it is observed that the result of the ranking of the college facilities, infrastructure facility takes up the supreme position of our ranking analysis. Library facilities are considered to be the second position. It is clearly shown in Table 6. Our findings are that infrastructure facilities and library facilities are a very significant factor of government colleges of Uttarakhand. It was revealed that infrastructure facilities is the major problem with highest Garrett score is 27515 and an average score is 27.52. Similarly library facilities with Garrett score is 26605 and an average is 26.60 is represented second. The third facility having Garrett score is 26190 and an average is 26.20 is toilet and water facility. The average score and rank are also plotted with the help of graph.

9. CONCLUSION

In conclusion, we analyze and discuss the government college facilities provided by Uttarakhand government. The Garrett Ranking is highly useful which facilitates the priority. It throws a considerable amount of light on the library facilities as well as in the infrastructure facilities by the Government. An analysis of the Garrett Ranking technique assists the college in framing and formulating the essential measures in handling the problems related to students.

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