

Statistical Analysis of Some Key Indicators of Higher Education in India and Gujarat

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Abstract

Higher education system in India is categorized as the world's third largest in terms of students, which is followed by USA and China respectively. Today, about 60% of higher educational institutions in India are promoted by the private sector. In present paper, Number of institutions, Male student enrolment, Female student enrolment, student teacher ratio, Gender parity index, Growth rate of institutions, Number of universities, Number of colleges are compared from 2011-12 to 2019-20 between Gujarat and India. Some of the findings are: (i) both in India and Gujarat female enrolment has been increased more in comparison of male enrolment. (ii) both in India and Gujarat, no. of universities and no. of colleges have been drastically increased in last 9 years. (iii) There is weak gender parity index in Gujarat in comparison of India (iv) highest growth rate of number of institutions is in 2014-15 in both Gujarat and India.

Keywords: student teacher ratio, Gender parity index, Growth rate of institutions, Independent T Test, Mann Whitney Test

1. Introduction

Higher education system in India is categorized as the world's third largest in terms of students, which is followed by USA and China respectively. In future, India will be one of the largest education hubs. India's Higher Education sector has witnessed a huge increment in the number of Universities/University level Institutions & Colleges since independence. The 'Right to Education Act' which stipulates mandatory and free education to all children within the age groups of six to fourteen years, has brought about a significant change in the education system of the nation with statistics showing an overwhelming enrolment in schools in the span of last four years. The inclusiveness of private sector in higher education has seen extreme change in the education sector.

Today, about 60% of higher educational institutions in India are promoted by the private sector. This has drastically increment in number of higher educational institutions which have originated over the last decade in India with the largest number of higher educational institutions in the world, with second highest number of student enrolments (Shaguri, 2013). The number of universities have been increased to 677 in 2014 from 20 in 1950 which is 34 times than that of 1950. Though, India has so many institutions in higher education, international education rating agencies have not categorized many of these higher institutions within the best of the global ranking. Also, India has failed to bring forth world class universities.

Today, Knowledge is power. The more knowledge one has, the more empowered one is. However, India continues to face stern challenges. Despite growing investment in educational system, 25 per cent of its population is still uneducated; only 15 per cent of Indian students' reach level high school, and just 7 per cent graduate (Masani, 2008). The quality of education in India whether at primary or higher education is significantly poor as compared to major developing as well as developed nations of the world.

In 2008, India's post-secondary institutions offer seats that could cater only 7 per cent of India's college-age population, 25 per cent of teaching positions nationwide are empty, and 57 per cent of college professors do not have either a master's or PhD degree (Newsweek, 2011). In 2011, there are 1522 degree engineering colleges in India with a yearly student intake of 582,000 (Science and Technology Education, 2009) with additional 1, 244 polytechnics with a yearly intake of 265,000. However, according to (Mitra 2008), these institutions face shortage of faculty and concerns have been raised for quality of education all over the country.

Notwithstanding, higher education system of India has lot of favourable circumstances to overcome these difficulties and have the skills to make its identity at global level. However, the role of universities and colleges need a much greater and better transparency and accountability in the new millennium, and emerging scientific research on how people learn is of utmost important. India provides highly capable people to other countries. Therefore, it is very easy for India to change our country from a developing nation to a developed nation with skilled and educated youth.

Sheikh (2017) has discussed that the growth of higher education of India is key point of this paper. The growth of universities and Colleges in India from 1970 to 2012 has been taken and showed that its increasing continuously. It is also discussed about some of the basic challenges in higher education system in India viz., Enrolment, Equity, Quality, Infrastructure, Political Interference, Faculty, Accreditation, Research and Innovations and structure of higher education.

Ghara (2016) has discussed Status of Indian Women in Higher Education. He discussed about Women population, Women enrolment, and women teachers. He also narrated state wise comparison for the years 2011 to 2016 and ranks of the percentage of women enrolment for the year 2011 to 2016 in different states. He found correlation coefficient between percentage of women in Higher education and percentage of women population in the age group 18-23. He also found correlation coefficient between percentage of women teacher and percentage of women enrolment. Linear Regression has been done and gives idea about 55% engagement of women teachers in Higher Education system may influence the women enrolment 50% or more.

2. Data:

The published reports of All India Survey on Higher Education (AISHE), Ministry of Human Resource Development (MHRD) from 2011-12 to 2019-20 have been considered as source of data for the variables viz. Number of institution, Male student enrolment, Female student enrolment, student teacher ratio, Gender parity index, Number of universities, Number of colleges, female population of age 18-23 from 2011-12 to 2019-20. The population data have been collected from Census reports.

3. Analysis on the basis of descriptive statistics

3.1 Comparison of Number of universities

From chart no. 1, it can be observed that during last one decade Number of universities in India has been increased drastically. In 2011-12, No. of universities in India were 612 which has been reached to 993 in 2019-20 which is almost 63% increase in last 9 years.

From chart no. 2, it can be observed that during last one decade Number of universities in Gujarat has also been increased drastically. In 2011-12, No. of universities in Gujarat were 38 which has been reached to 76 in 2019-20 which is twice in last 9 years.

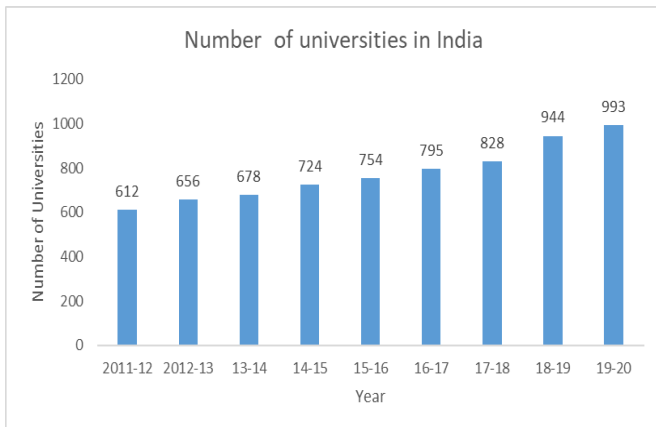


Chart No.1: No. of universities in India

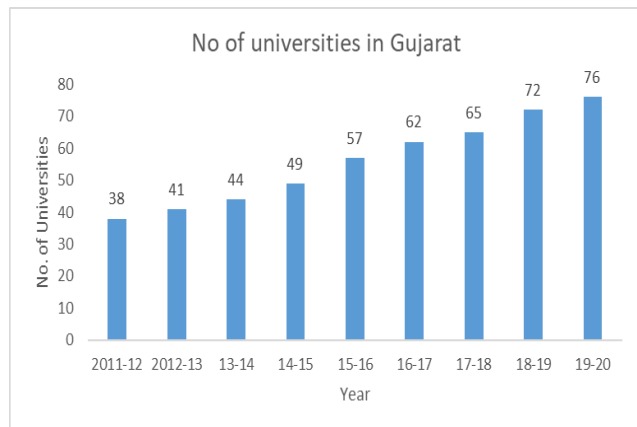


Chart No. 2: No. of universities in Gujarat

3.2 Comparison of Number of colleges:

From chart no. 3, it can be observed that during last one decade Number of colleges in India has been increased drastically. In 2011-12, No. of colleges in India were 26918 which has been reached to 47841 in 2019-20 which is almost 78% increase in last 9 years.

From chart no. 4, it can be observed that during last one decade Number of colleges in Gujarat has also been increased drastically. In 2011-12, No. of colleges in Gujarat were 1949 which has been reached to 2718 in 2019-20 which is almost 40% increase in last 9 years.

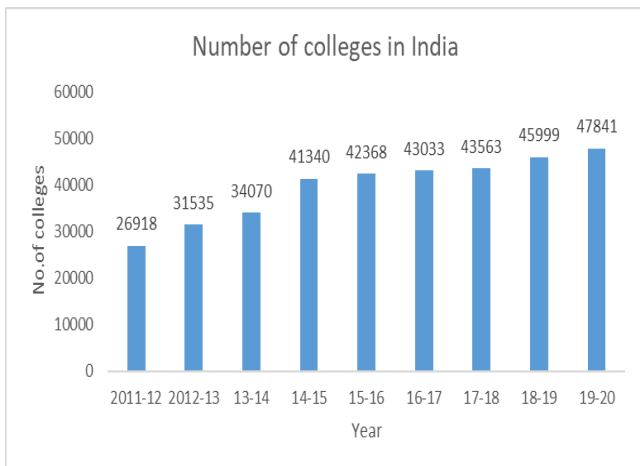


Chart No. 3: No. of colleges in India

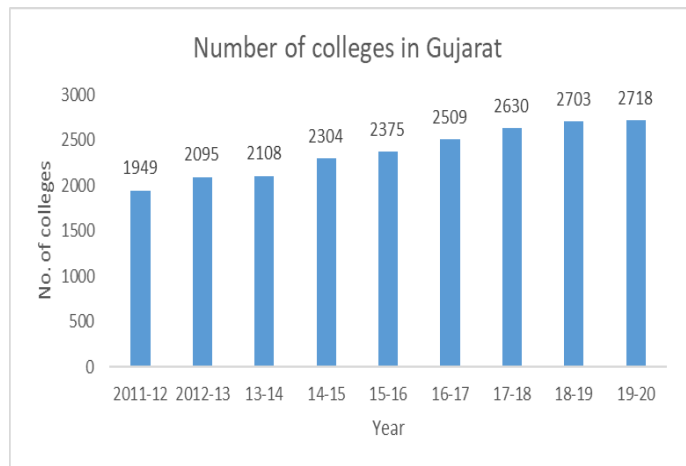


Chart No. 4: No. of colleges in Gujarat

3.3 Comparison of Gender wise enrolment

From chart no. 5, it can be depicted that Number of male and female enrolment in India in 2011-12 were respectively 12179080 and 9682001 whereas in 2019-20, Number of male and female enrolment has been reached to 18533943 and 17718728 respectively in India which shows 52% and 83% increase in enrolment of male and female respectively in last 9 years.

From chart no. 6, it can be depicted that Number of male and female enrolment in 2011-12 in Gujarat were respectively 684922 and 489826 whereas in 2019-20, Number of male and female enrolment has been reached to 862374 and 677682 respectively in Gujarat which shows 26% and 38% increase in enrolment of male and female respectively in last 9 years.

It means we can conclude that both in India and Gujarat female enrolment has been increased more in comparison of male enrolment.

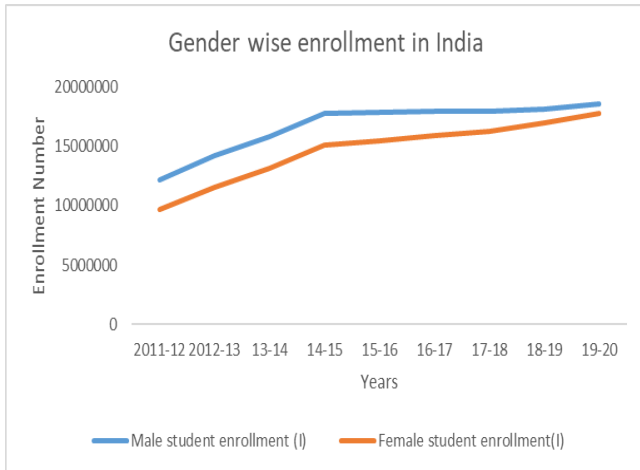


Chart No. 5: Gender wise enrolment in India

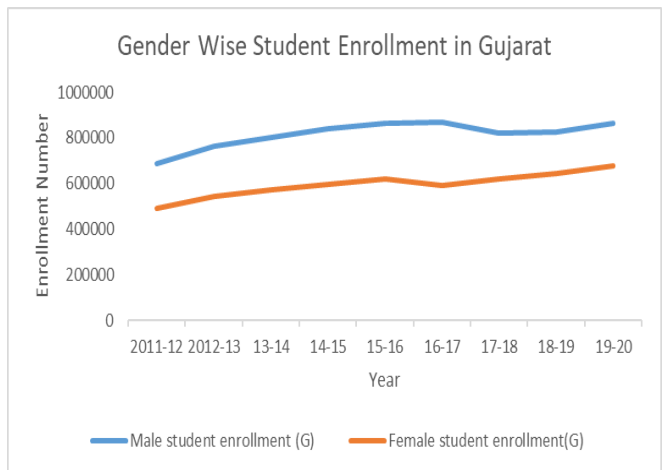
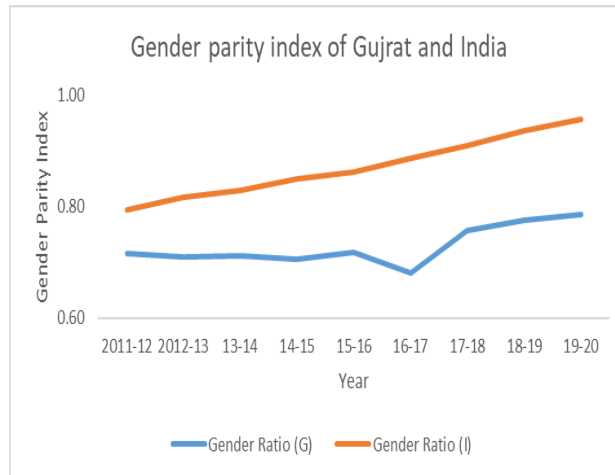


Chart No. 6: Gender wise enrolment in Gujarat

3.4 Comparison of Gender Parity Index



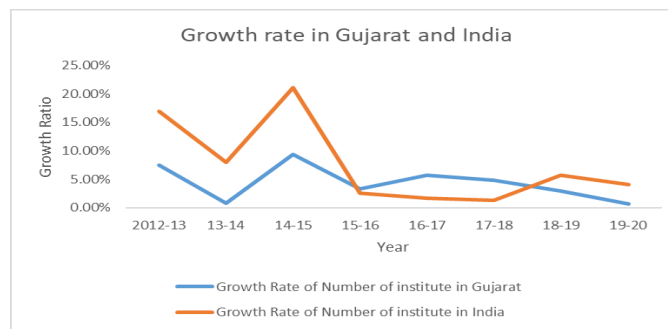
Gender parity index is ratio of female enrolment to the male enrolment. From the chart no. 7, it can be seen that gender parity index in India has been improved during last 9 years and it is near to 1 in 2019-20 which shows gender equality in enrolment. It can be observed that gender parity index in Gujarat has been improved to some extent during last 9 years. From 2011-12 to 2015-16 it was steady, in year 2016-17 it has decline and then increased from 2017-18.

Chart No. 7 – Gender Parity Index

3.5 Comparison of Growth rate of No. of institutions

Table 1: Growth rate of number of institutes

Year	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Growth Rate of Number of institutes in Gujarat	7.50%	0.75%	9.34%	3.36%	5.72%	4.82%	2.97%	0.68%
Growth Rate of Number of institutes in India	16.93%	7.94%	21.05%	2.52%	1.64%	1.28%	5.75%	4.03%



From the chart no. 8, it can be interpreted that Growth rate is very high in both Gujarat and India in the year 2014-15 followed by 2012-13.

Chart No. 8 – Growth Rate in Gujarat and India

4. Analysis on the basis of Inferential statistics:

4.1 Test of significance difference between gender ratio of Gujarat and India

Ho: There is normality in gender ratio of Gujarat in India.

H1: There is no normality in gender ratio of Gujarat in India.

Table 2 : Test of Normality – Gender Ratio

Tests of Normality – Gender Ratio			
	Shapiro-Wilk Statistic	df	Sig.
Gender Ratio Gujarat	0.888	9	0.189
Gender Ratio India	0.97	9	0.892

From table no.2 it can be seen that p value of the Shapiro wilk test is greater than 0.05 for both Gujarat and India satisfy the assumption of normality. So to compare gender ratio between Gujarat and India independent t test can be applied.

Ho: There is no significant differences between gender ratio in Gujarat in India.

H1: There is significant differences between gender ratio in Gujarat in India.

Table 3 : Independent Samples Test Gender ratio

Independent Samples t - test Gender Ratio					
	Levens Test for equality of variance		t-test for Equality of Means		
	F	P -value	t	df	P value
Equal variances assumed	2.256	0.153	-6.238	16	0.000
Equal variances not assumed			-6.238	13.708	0.000

From table 3 it can be seen that Levene’s test, p value is 0.153 which is greater than 0.05 for Gujarat and India both so null hypothesis may not be rejected at 5 % level of significance. It may be concluded that variances are equal for both groups. It can also be observed that p value of independent t test statistic is 0.000 which is less than 0.05 so null hypothesis may be rejected at 5% level of significance. It can be concluded that there is statistically significant difference between gender ratio in Gujarat in India.

4.2 Test of significance difference between student teacher ratio of Gujarat and India

Ho: There is normality in student teacher ratio of Gujarat in India.

H1: There is no normality in student teacher ratio of Gujarat in India.

Table 4: Test of Normality – Student teacher ratio

Tests of Normality – Gender Ratio			
	Shapiro-Wilk Statistic	df	Sig.
Student teacher ratio Gujarat	0.609	9	0.000
Student teacher ratio India	0.752	9	0.006

From table no.4 it can be seen that p value of the Shapiro wilk test is less than 0.05 for both Gujarat and India does not satisfy the assumption of normality. So to compare student teacher ratio between Gujarat and India Mann-Whitney U test can be applied.

Ho: There is no significant differences between student teacher ratio between Gujarat in India.

H1: There is significant differences between student teacher ratio between Gujarat in India.

Table 5 : Independent Samples Test Gender ratio

Independent-Samples Mann-Whitney U Test Summary	
Total N	18
Mann-Whitney U	19.000
Wilcoxon W	64.000
Test Statistic	19.000
Standard Error	11.295
Standardized Test Statistic	-1.903
Asymptotic Sig.(2-sided test)	0.057
Exact Sig.(2-sided test)	0.063

It can be seen from table no. 5 that p value of Mann Whitney test statistic is greater than 0.05, null hypothesis may not be rejected at 5% level of significance. It can be concluded that there is no statistically significant difference between student teacher ratio in Gujarat in India.

5. Conclusion

- Both in India and Gujarat female enrolment has been increased more in comparison of male enrolment.
- Both in India and Gujarat, no. of universities and no. of colleges have been drastically increased in last 9 years.
- There is weak gender parity index in Gujarat in comparison of India.
- Highest growth rate of number of institutions is in 2014-15 in both Gujarat and India.
- There is statistically significant difference between gender ratio in Gujarat in India. India is better in comparison of Gujarat.
- There is no statistically significant difference between student teacher ratio in Gujarat in India.

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