

Project Completion Report
Analysis of Career Path of Women Engineers in
the State of Telangana

by

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DST Project No. DST/NSTMIS/05/233/2016-17

Study Sponsored by

National Science and Technology Management Information System (NSTMIS)

Department of Science & Technology

Government of India

(August, 2021)

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The National Science and Technology Management Information System(NSTMIS), a division of Department of Science and Technology(DST) has been entrusted with the task of building the information base on a continuous basis on resources devoted to scientific and technological activities for policy planning in the country.

Citation:

The report may be cited as DST (2021):Report on “Analysis of Career Path of Women Engineers in the State of Telangana”, PI – Dr. T. Roja Rani, New Delhi, Govt. of India

Disclaimer:

Every care has been taken to provide the authenticated information. However, the onus of authenticity of data rests with the PI of the project.

PREFACE

This project has been prepared for the NSTMIS (DST) project titled “Analysis of Career Path of Women Engineers in the State of Telangana” mainly focused to know the attrition levels as women moves from Bachelors to Masters degree programs and also from Masters to Ph.D programs.

For preparing the Project Report, visited most of the Engineering Colleges situated in newly formed Telangana State consists of 31 districts. Covered districts and interacted with the students, faculty members and management to avail the necessary information. The blend of the information acquired during our interaction is presented in this Project Report.

The rationale behind visiting Engineering colleges is to know the real problems faced by the students and faculty when they move in their career path.

ACKNOWLEDGEMENTS

First of all, I am very much thankful to **The National Science and Technology Management Information System(NSTMIS), a division of Department of Science and Technology(DST)** for sanctioning this project.

I convey my sense of gratitude to Dr. HB Singh, Scientist-E, DST and Dr.A.N. Rai, Scientist-G/Adviser, NSTMIS Division and also Dr.P.K.Arya, Scientist 'C', PCPM (NSTMIS), DST for their constant guidance, support, advises given to me in completing this project.

My heartfelt thanks to all LPAC members headed by Dr. H.B.Singh, for their support extended to me in this regard. I am also thankful to AICTE, UGC, TSCHE, MHRD, Reports of News Papers and news channels in providing relevant information in this regard.

I express my sincere thanks to Sri K.V.Vishnu Raju Garu, Chairman, Sri Vishnu Educational Society, Dr. KVN Sunitha, Principal, BVRITH, Dr. P. Anuradha, Dr. J. Manoj Kumar, HOD, Dr. S. Kalyan, Colleagues and friends in extending their support to undergo my project work.

Dr. T. ROJA RANI

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EXECUTIVE SUMMARY

India is making strides to empower women. Women are better integrated into the workforce now compared to 50 years ago. They are entering technical fields and contributing significantly to the overall well-being of the nation. There are several economic, social and cultural factors playing a key role in limiting the education – particularly engineering education. The number of women, on an average, working in organizations is less when compared to men in spite of reservation policies to women. Women graduates are satisfied with the campus placements and positions, as such they are losing interest in pursuing higher education. Hence, motivation on the importance of enhancing Higher Education should be stressed.

There would be random difference in the confidence levels of Men and Women graduates. The lower levels of self confidence of girls should be boosted up to improve their academic performance. Understanding Concepts is also a skill to be honed by girl students. Getting command over concepts help them to work on some research oriented projects. Girl students will have more stress when compared to boys during exams. Some sessions on stress management will help them to overcome stress. Because of the growing modernization there is a deterioration in values. Sessions on personality development, Values & Ethics is the need of the day for the overall development of girl students.

There is a biggest gap in the overall enrolment of women in undergraduate level in technical education (BE/B.Tech), where there are 26,736 females as compared to 96,724 males. Similarly at postgraduate level, the number of females is just 12,819 in a population of 50,201. The number of women enrolling in PhD programs over the years has been constantly lesser than men in Engineering stream. The enrolment of women in Ph.D in other streams like Medical, Nursing, Social Sciences and MBA has been increased when compared with men. Research

options in India are offered only after post graduation. Girl Students are stopped from pursuing higher education because of societal pressures and limitations due to family reasons. The problems faced by Engineering faculty from the study are gender diversity, work life balance, career plateau and delay in promotions.

Objectives of the Study:

1. Quantify attrition levels as women move from bachelors to masters to doctoral degree programs in Telangana;
2. Identify and quantify key problems faced by women engineering students in different programs during their educational journey Bachelors/Masters/Doctoral degrees;
3. Quantify the number of women faculty in different types of institutions;
4. Identify opportunities available to women engineering faculty;
5. Identify and quantify key problems faced by women engineering faculty members at different levels of career path.

Methodology:

This study mainly focuses on the analysis of career path of Women Engineers in Telangana state. A total of 31 districts were selected for the study particularly Engineering Colleges to examine their career path. Convenience sampling was employed for the study. Girl students were only selected for the study. Because the enrolment of women in engineering courses are less when compared to enrolment of women in other disciplines like medical sciences and social sciences.

A Questionnaire has been prepared to carry out the study. Primary data is collected from the girl students of Engineering colleges located in Telangana State and the secondary data has been taken from AICTE, UGC, HRD, TSCHE, AISHE, State

Government, Opinion of Alumni Students, News papers etc.

Results and Discussion:

1. Attrition levels of women from bachelors to masters, masters to doctoral degrees has gradually declined in Engineering stream.
2. The following major problems identified when students move from bachelors to Masters and from Masters to Doctoral Program are:
 - Parents cannot afford for higher studies.
 - Universal marriage system.
 - Students would like to settle with the available jobs.
 - More number of children in the family.
 - Unclear goals for pursuing higher studies.
 - Lack of family support
3. There are many opportunities that are available to women faculty members like
 - Pursuing PhD program.
 - DST/UGC/SERB research projects.
 - Promotions.
4. Following are the key problems faced by women engineering faculty members at Different levels of their career path
 - Gender diversity
 - Work Life Balance

- Career Plateau
- Delay in Promotions etc.

Findings and Recommendations

1. Both the enrolment rate and pass percentage of men seeking higher education is decreasing with each passing year. Whereas, the enrolment rate and pass percentage for women is increasing.
2. The enrolment rate of women in Engineering Studies is less when compared with the enrolment of women in Medical sciences and Social sciences.
3. There is a biggest gap in the overall enrolment of women in undergraduate level in technical education (BE/B.Tech), where there are 26,736 females as compared to 96,724 males. Similarly at postgraduate level, the number of females is just 12,819 in a population of 50,201.
4. The number of women enrolling in Ph.D. programs over the years has been constantly lesser than men in 2017-18 around 1 lakh men enrolled in Ph.D. as compared to only 65,000 women.
5. Research options in India are offered only after post graduation.
6. The most influential reasons from the study are Parents cannot afford for their higher studies, Not aware of Financial assistance schemes for higher education, Universal marriage System, students would like to settle with the available jobs, more number of children in the family, unclear goals for pursuing higher studies, lack of family support.
7. Girl Students are stopped from pursuing higher education because of societal pressures and limitations due to family reasons.

8. The problems faced by Engineering faculty from the study are gender diversity, work life balance, career plateau and delay in promotions.
9. 10% of women would like to do their higher education in other countries, not in India.

Recommendations:

1. Proper counselling need to be groomed to girl students about career path from schooling.
2. Awareness programmes should be given as there is no proper awareness about Government schemes for higher education specially for women.
3. Special campaigns should be arranged in the areas where the women education is very less.
4. Educating the parents about the importance of women education and self reliance.

CHAPTER 1

INTRODUCTION, OBJECTIVES & LIMITATIONS

INTRODUCTION:

India is making strides to empower women. Women are better integrated into the workforce now compared to 50 years ago. They are entering technical fields and contributing significantly to the overall well-being of the nation. There are several economic, social and cultural factors playing a key role in limiting the education – particularly engineering education. The number of women, on an average, working in organizations is less when compared to men in spite of reservation policies to women. Women graduates are satisfied with the campus placements and positions, as such they are losing interest in pursuing higher education. Hence, motivation on the importance of enhancing Higher Education should be stressed.

There would be random difference in the confidence levels of Men and Women graduates. The lower levels of self confidence of girls should be boosted up to improve their academic performance. Understanding Concepts is also a skill to be honed by girl students. Getting command over concepts help them to work on some research oriented projects. Girl students will have more stress when compared to boys during exams. Some sessions on stress management will help them to overcome stress. Because of the growing modernization there is a deterioration in values. Sessions on personality development, Values & Ethics is the need of the day for the overall development of girl students.

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OBJECTIVES:

1. Quantify attrition levels as women move from bachelors to masters to doctoral degree programs in Telangana;
2. Identify and quantify key problems faced by women engineering students in different programs during their educational journey Bachelors/Masters/Doctoral degrees;
3. Quantify the number of women faculty in different types of institutions;
4. Identify opportunities available to women engineering faculty;
5. Identify and quantify key problems faced by women engineering faculty members at different levels of career path.

LIMITATIONS:

The project is limited to colleges which are located in Telangana state, consisting of large number of educational institutions and Hyderabad is a hub of many industries.

1. The project is particularly concentrated on Engineering students and the responses collected.

2. This study has focused only on girl students and faculty in Engineering colleges only.
3. The study is restricted to colleges located in Telangana State and hence the findings cannot be generalized to other streams.
4. Included only Primary and secondary data gathered from the samples respondents, data available, but college management views are not included.

CHAPTER 2

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Meinholdt and Murray (1999) found that women engineering students receive less support from peers and mentors and also, less confident about their success. They also face negative attitude from men. Isaacs (2001) describe that the only way to change the number of women employed as engineers in the United States (which is less than 10%) is educating the public about the role of engineer beyond math. Jagacinski et al. (2007) found that the data doesn't survey most hypotheses dealing with the advancement of engineering careers in men and women. Educational level or self-perception of the engineering abilities explain the career advancement. They conclude the actual cause of a lack of comparative career advancement in women is unknown.

Parikh and Sukhatme (2004) discuss the results two major surveys –

1. Study 1 is based on a 15 year longitudinal data from 1975 – 90 on the output of the engineering colleges across different states of India in different disciplines. The study also looked at the opportunities, problems and career profiles of women engineers.
2. Study 2 deals with the women engineers graduating between 1994-98 in five major engineering disciplines in seven states. The seven (eight) states were selected based on the significant percentage of women graduates from these states. The states are Andhra Pradesh (current states of Telangana and Andhra Pradesh), Delhi, Gujarat, Karnataka, Kerala, Maharashtra and Tamil Nadu. These states contributed approximately 80% of

women graduates in the country during the study period. The study focused both on the job status/career profile as well as the difficulties faced by women.

These studies found that technical educational institutions are the largest employer of women followed by Government and small-scale private industry. Moon (2015) describes the trends in the choice of different higher education programs among women.

Verma (2010) describe the opposite trend on increasing participation of women in computer science as compared to the United States and the role of self-efficacy in the success of women. Moon (2012)

Gupta (2012) empirically describe the increasing participation of women in engineering particularly in computer science and the impact of high-paying jobs in this area. Patel and Parmentier (2005) describe the problems facing women in IT industry as “not only does women’s participation fail to occur at the same speed as IT expansion, but that their participation is based on a continuation of traditional gender roles, which places women on the periphery of an employing organization.” Srinivasan et al. (2013) studied career persistence in the software profession among women and based on the study, recommends child-care support and flexible work schedule are key for women to persist in the job. These studies and many other quantify the participation of women and identify the problems faced by women in IT sector.

Ms. Seema Singh (2013) in her article “Women in Engineering Education in India” expressed that participation of women in science and technology is not only an important aspect in social and economic development of the nation; it is a critical constituent in the process of improving the quality of life of women themselves. However, engineering education has remained male dominated segment of higher education. In this background, the paper tries to analyze data on women enrolment as well women faculty members through out the country. Though enrolment

in term of number as well as percentage, women participation has increased through out the country, the growth is not even through out the country.

On the other hand, similar studies are limited number of studies are done in engineering education sector which most women engineers choose as their career choice. Women outnumber men in post-graduate degrees in the ratio of 17:7 (Krishna,2013). Gupta (2007) reports that women pursuing doctoral degrees are at a disadvantage in the field of science and face biases and discrimination similar to the ones faced by their western counterparts. Bal (2002) discusses the marginalization of women as they move in the academic career by conscious or unconscious exclusion from the positions of power. The entry-level faculty struggle to balance work and family particularly due to motherhood and demands of the early family life. Singh and Jha (2012)

CHAPTER 3

METHODOLOGY, SAMPLING DESIGN, DATA SOURCES

RESEARCH METHODOLOGY:

This study mainly focuses on the analysis of career path of Women Engineers in Telangana state. A total of 31 districts were selected for the study particularly Engineering Colleges to examine their career path. Convenience sampling was employed for the study. Girl students were only selected for the study. Because the enrolment of women in engineering courses are less when compared to enrolment of women in other disciplines like medical sciences and social sciences.

A Questionnaire has been prepared to carry out the study. Primary data is collected from the girl students of Engineering colleges located in Telangana State and the secondary data has been taken from AICTE, UGC, HRD, TSCHE, AISHE, State Government, Opinion of Alumni Students, News papers etc.

SAMPLING DESIGN:

Convenience sampling has been used to collect the data. The total number of girl students enrolled in B.Tech Program is 42,813 in the state of Telangana in the year 2018-19. However, the total number of boys enrolled in UG Program is 6,43,328 and girls 6,17,486. The sample

size determined is given in the following table.

Calculation of Sample Size	
<p>Step -1:</p> <p>Calculation of Sample Size For Infinite population</p> <p>Formula:</p> $SS = X^2 * P * (1-P)/C^2$ <p>Where,</p> <p>SS = Sample Size</p> <p>X = Z Value (here 1.96 for 95% confidence level)</p> <p>P = Population Proportion</p> <p>C = Confidence Level (5%)</p> $SS = (1.96)^2 * 0.5 * 0.5 / 0.05$ <p>SS = 384</p>	<p>Step – 2:</p> <p>Calculation of Sample Size For Finite population</p> <p>Formula:</p> $\text{New SS} = SS / (1 + (SS/N))$ <p>Where,</p> <p>New SS = Sample Size for Finite Population</p> <p>SS = 384 (from Step-1)</p> <p>N = Population ie.,(42,813)</p> $\text{New SS} = (384 / (1 + (384/42,813)))$ <p>New SS = 381</p>

Source:

James E. Bartlett, II, Joe W.Kotrlik and Chadwick C.Higgins (2001),

—Organizational Research: Determining Appropriate Sample Size in Survey Research, Information Technology, Learning, and Performance Journal, 19(1), 43-50.

As given in the table, the sample size is 381. The questionnaires collected for the study is 412 and the analysis has been carried out with the said number.

The sample consists of only girl students undergoing Engineering Program in 31 districts of Telangana state.

DATA SOURCES:

The data required for this study includes primary data and secondary data. Primary data has been collected by questionnaire supplied to the students and taking some of the information by direct interaction with the students and also the faculty members. Secondary sources has also been used to collect required information for this project. It includes UGC, AICTE, TSCHE etc.

CHAPTER 4

DATA ANALYSIS

1. Factor Analysis is used to find the most influencing factors and to Identify and quantify key problems faced by women engineering students in different programs during their educational journey Bachelors/Masters/Doctoral degrees.

Factor Analysis is a statistical technique to study the inter-relationships among the variables in an effort to find a new set of factors, fewer in number than the original variables so that the factors are common among the original variables. In Factor Analysis a small number of common factors are extracted so that these common factors are sufficient to study the relationships of original variables. Factor Analysis helps the researcher to reduce the number of variables to be analysed, thereby making the analysis easier. Using Factor Analysis, the researcher can reduce the large number of variables into a few dimensions called Factors that summarize the available data. The Terminology used in Factor Analysis are

- **Factor:** A factor is an underlying construct or dimension that represents a set of observed variables. In the credit card company example, the demographic characteristics, socio economic status and background status represent a set of variables.
- **Factor Loadings:** Factor loading help in interpreting and labeling the factors. It measures how closely the variables in the factor are associated. It is also called factor-variable correlation. Factor loadings are correlation coefficients between the variables and the factors.
- **Eigen Values:** Eigen values measure the variance in all the variables corresponding to the factor. Eigen values are calculated by adding the squares of factor loading of all the variables in the factor. It aims in explaining the importance of the factor with respect to variables. Generally factors with Eigen values more than 1.0 are considered stable. The factors that have low Eigen values (<1.0) may not explain the variance in the variables related to that factor.
- **Communalities:** Communalities, denoted by h^2 , measure the percentage of variance in each variable explained by the factors extracted. It ranges from 0 to 1. A high communality value indicates that the maximum amount of the variance in the variable is explained by the factors extracted from the factor analysis.
- **Total Variance explained:** The total variance explained is the percentage of total variance of the variables explained. This is calculating by adding all the communality values of each variable and dividing it by the number of variables.
- **Factor Variance explained:** The factor variance explained is the percentage of total variance of the variables explained by the factors. This is calculating by adding the squared factor loadings of all the variables and dividing it by the number of variables.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.703
Bartlett's Test of Sphericity	Chi-Square value	1253.342
	P value	0.000**

Note: ** Denotes significant at 5% level

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is a statistic that indicates the proportion of variance in variables that might be caused by underlying factors. The Kaiser-Meyer-Olkin value of 0.703 which is greater than 0.50 indicate that a factor analysis is useful with our data. Bartlett's test of Sphericity tests the hypothesis that correlation matrix is an identity matrix, which would indicate that variables are unrelated and therefore unsuitable for structure detection. Since P value is less than 0.05, the hypothesis is rejected and indicate that variables are related a factor analysis and is useful with our data.

Factor Analysis

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.904
Bartlett's Test of Sphericity	Approx. Chi-Square	2959.87
	df	3
	Sig.	105
		.000

To identify the challenges faced by the women in their career path by the sample respondents

	Varibales	Initial	Extraction
Q16.1	Parent cannot afford to pay for higher studies	1.000	.532
Q16.2	Dowry system	1.000	.496
Q16.3	Universal Marriage System	1.000	.437
Q16.4	Lack of Self motivation	1.000	.582
Q16.5	Available jobs are sufficient	1.000	.583
Q16.6	More number of children in the family	1.000	.495
Q16.7	Unclear Goals for pursuing higher studies	1.000	.536
Q16.8	Health Issues	1.000	.465
Q16.9	No scholarship disbursement	1.000	.486
Q16.10	Lack of Social support	1.000	.636
Q16.11	Lack of awareness about different courses	1.000	.663
Q16.12	Taking care of children and not studying further	1.000	.609
Q16.13	Single parent feel burden to educate the child	1.000	.639
Q16.14	Shortage of educated boys in their respective caste	1.000	.599
Q16.15	Irresponsible Parents	1.000	.456

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.218	41.456	41.456	4.514	30.093	30.093
2	1.995	13.301	54.757	3.700	24.664	54.757
3	.878	5.855	60.612			

4	.787	5.250	65.862			
5	.664	4.428	70.290			
6	.647	4.314	74.603			
7	.620	4.134	78.738			
8	.565	3.766	82.504			
9	.501	3.341	85.845			
10	.441	2.942	88.786			
11	.435	2.901	91.687			
12	.373	2.484	94.171			
13	.346	2.304	96.475			
14	.285	1.898	98.373			
15	.244	1.627	100.000			

Extraction Method: Principal Component Analysis.

Rotated Component Matrix(a)

	Component	
	1	2
Q16.1	.795	.178
Q16.2	.794	.095
Q16.3	.784	.147
Q16.4	.774	.102
Q16.5	.741	.224
Q16.6	.653	.244
Q16.7	.616	.277

Q16.8	.528	.504	
Q16.9	.069	.760	
Q16.10	.097	.756	
Q16.11	.058	.730	
Q16.12	.192	.677	
Q16.13	.299	.613	
Q16.14	.348	.612	
Q16.15	.377	.543	

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser

Normalization. a Rotation converged in 3 iterations.

From the above table it is observed that the most influential factors has been identified as Parent cannot afford to pay for higher studies and early marriage with dowry system by which the reason why girl students are not moving from bachelors to masters and masters to doctoral programs. The list above shows the various problems faced by girl child in her career path.

CHAPTER 5

RESULTS AND DISCUSSION

Demographic and Socio-economic Profile of the Respondents

- i. **Stream of Study:** The majority of the students in the engineering colleges in the sample area are from CSE/IT (45.5%) and ECE (27.6%). The least percentage of the students are from Mechanical Engineering and an Automotive Engineering branch with 7.5% of the sample.
- ii. **Medium of Study:** 49.8% of the students from engineering colleges in the sample have completed their previous study in English medium schools, 31.2% are from Telugu medium and 19 percent are from other languages (In Hyderabad region Hindi and Urdu medium are available).
- iii. **Nativity:** It is noticed that, 57.9 percent of the students studying in the

engineering colleges in the sample area are local and 42.1 percent belongs to non local.

- iv. **Mother Tongue:** It is observed that 60.5 percent of the students from engineering colleges belong to Telugu as mother tongue, 39.5 percent report of students belongs to other languages.
- v. **Language used to Learn:** The language used to learn by the engineering graduates in the sample are observed as 52.7 percent using English as a medium to learn, 30.1 percent uses mother tongue, and 17.2 percent uses (Hindi/Urdu) as a medium to learn and share information. This will have considerable impact on further studies.
- vi. **Source of Learning:** It is noticed that 36.2 percent of the engineering students in the sample prefer to learn from teacher, 27.1 percent prefers friends and study group, 16.1 percent prefer tuition center, 10.4 percent prefers self learning from books, and 10.2 percent prefer learning through internet and online sources. This clearly indicates that, there is no better alternative to teacher in learning.
- vii. **Average Academic Score:** From the primary data, 37.6 percent of the engineering students are from the B - grade score, 23.1 percent belongs to C-grade, 14 percent of them are belongs to D- grade and 11.3 percent of the students are having E grade. It is also observed that only 14 percent of the students only in A grade academic score in the sample.

ROLE OF PARENTAL DEMOGRAPHICS

- i. **Parent's Qualification:** It is observed that 31.9 percent as Intermediate/HSC as the parental qualification, 21.9 percent indicated no formal qualification, 16.3 percent of the parents are undergraduates, 13.3 percent of the parents are holding a post graduate degree and 16.5 percent of the parents are professionals/Doctorates.
- ii. **Occupation of Parents:** It is noticed that 27.1 percent of the parents are farmers, 26 percent is salaried class, 15.4 percent are businessmen, 21.9 percent are professionals, and 9.5 percent are landlords in the sample. This indicates that, parents hailing from an agriculture background are more preferred group to join post graduation courses and to make out their career.

- iii. **Number of Siblings:** It is identified that 34.4 percent of the students reported that the number of sibling in the family are two, 26.5 percent reported as one sibling, 20.4 percent of the sample reported as three siblings, and 18.8 percent of the respondents reported as above three siblings.
- iv. **Higher Studies** (Preference of Students after B.Tech): Girl students after their B.Tech, 30 percent of them are interested in Higher studies, 20 percent are interested in writing competitive exams for government jobs, 30 percent of them are interested to go for jobs, only 3 percent are interested in internships or research and 17% of the students are interested in doing their own business from home.

CHAPTER 6

FINDINGS, SUMMARY & RECOMMENDATIONS

FINDINGS:

1. Both the enrolment rate and pass percentage of men seeking higher education is decreasing with each passing year. Whereas, the enrolment rate and pass percentage for women is increasing.
2. The enrolment rate of women in Engineering Studies is less when compared with the enrolment of women in Medical sciences and Social sciences.
3. There is a biggest gap in the overall enrolment of women in undergraduate level in technical education (BE/B.Tech), where there are 26,736 females as compared to 96,724 males. Similarly at postgraduate level, the number of females is just 12,819 in a population of 50,201.

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7. Girl Students are stopped from pursuing higher education because of societal pressures and limitations due to family reasons.
8. The problems faced by Engineering faculty from the study are gender diversity, work life balance, career plateau and delay in promotions.
9. 10% of women would like to do their higher education in other countries, not in India.

RECOMMENDATIONS:

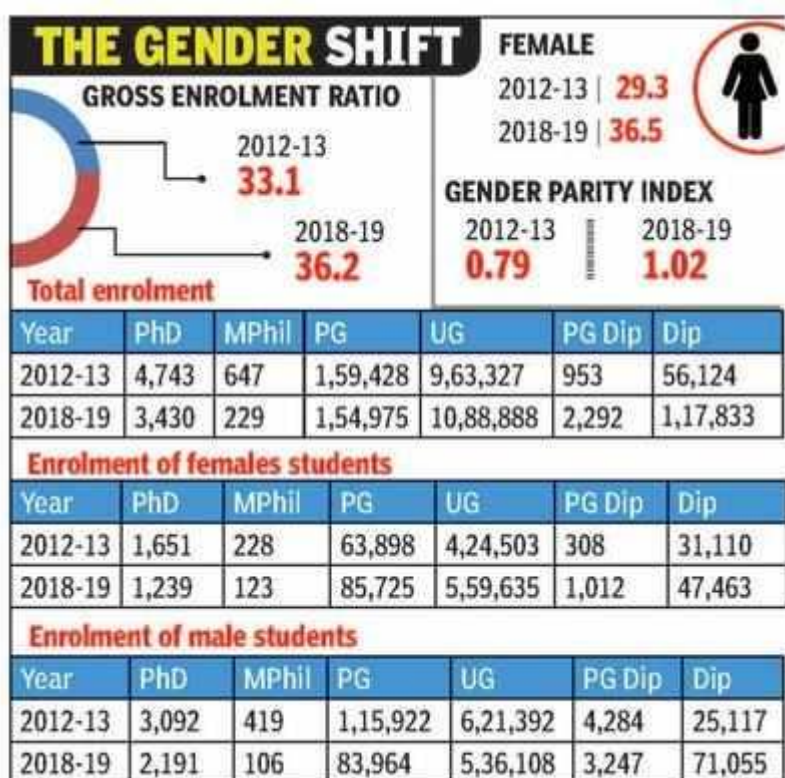
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3. Special campaigns should be arranged in the areas where the women education is very less.

4. Educating the parents about the importance of women education and self reliance

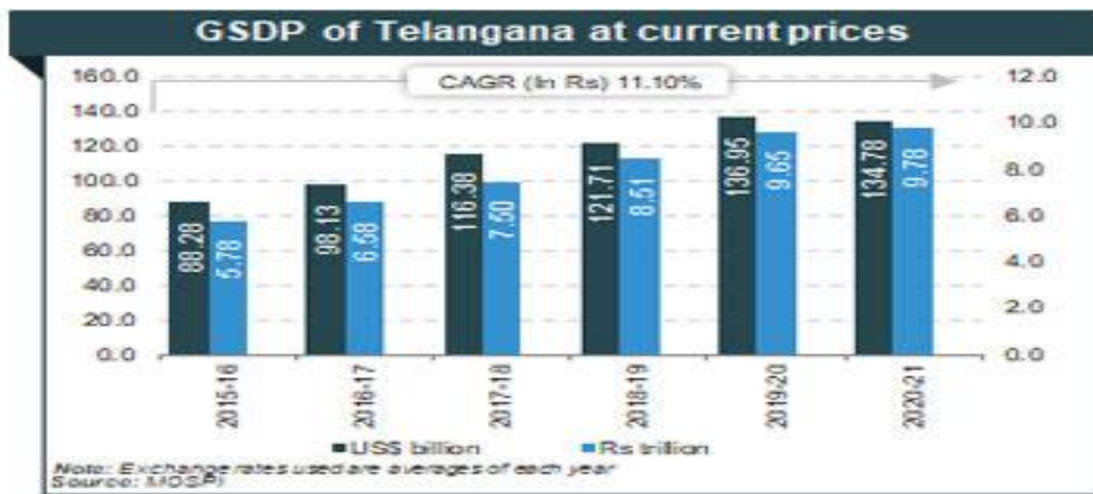
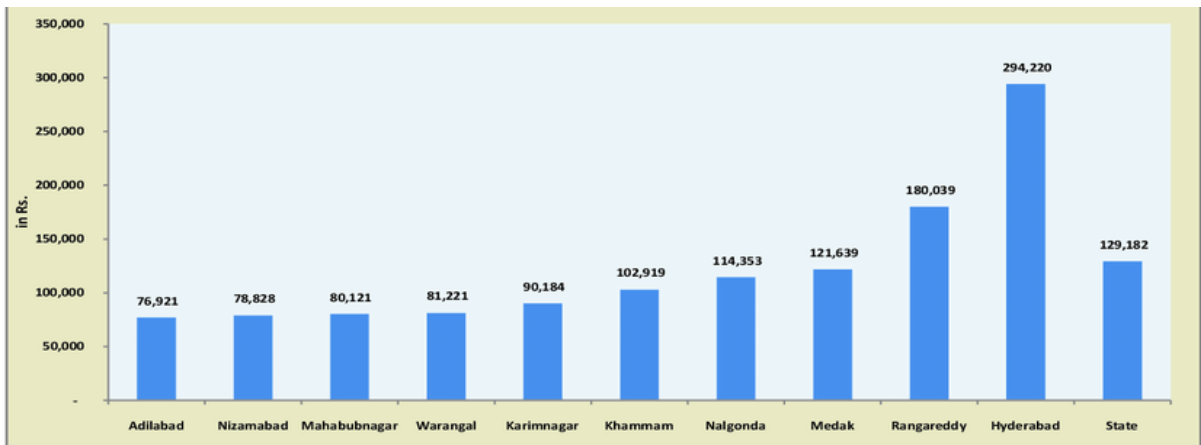
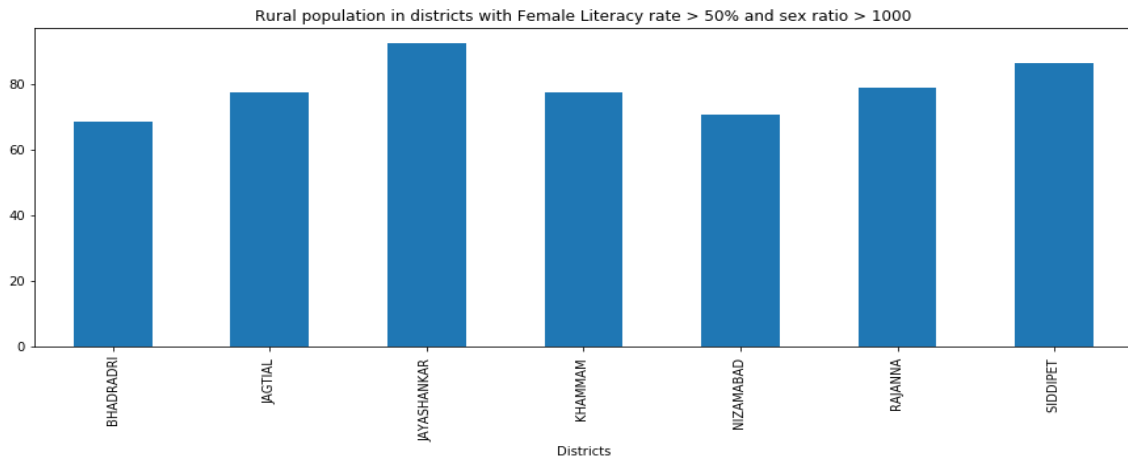
RECOMMENDATIONS MADE BY PROJECT ADVISORY COMMITTEE:

- a) Analysis on Local factors, Geographic factors and Social factors that affect the girls education:

Local factors include most of the families in Telangana they feel that boy child is an asset to the family and girl child is a loss. Till today they would like to have more and more boys in their home. They do not want to educate the girl child. Girls made to feel lower, degraded; this may be the one of the reason not sending their girl child to higher education. Child marriages, female feticide and female infanticide are the factors that will demotivate the girl child not to go for higher education. Lack of proper sanitation facilities and civic amenities are some of the barriers to a girl child to go for higher education. Many religious and cultural beliefs had a negative influence on the girl education. Child labor, Child abuse, Child marriages plays an important role.



b) Analysis on Development issues of Different localities (District wise):



With the above analysis, we can understand that the literacy rate of women in higher education influenced by Per capita income of that district, industrial development and GSDP of the Telangana State.

k) RESEARCH SUMMARY

**“ Analysis of Career Path of Women Engineers in the State of Telangana” - 2018-2021,
by Dr. T. Roja Rani, BVRIT Hyderabad College of Engineering for Women,
Hyderabad.**

India is making strides to empower women. Women are better integrated into the workforce now compared to 50 years ago. There are several economic, social and cultural factors playing a key role in limiting the education – particularly engineering education. The number of women, on an average, working in organizations is less when compared to men in spite of reservation policies to women. Women graduates are satisfied with the campus placements and positions, as such they are losing interest in pursuing higher education.

There is a biggest gap in the overall enrolment of women in undergraduate level in technical education (BE/B.Tech), similarly at postgraduate level also. The number of women enrolling in PhD programs over the years has been constantly lesser than men in Engineering stream. Girl Students are stopped from pursuing higher education because of societal pressures and limitations due to family reasons. The problems faced by Engineering faculty from the study are gender diversity, work life balance, career plateau and delay in promotions.

There would be random difference in the confidence levels of Men and Women graduates. The lower levels of self confidence of girls should be boosted up to improve their academic performance. Girl students will have more stress when compared to boys during

exams. Some sessions on stress management will help them to overcome stress. Because of the growing modernization there is a deterioration in values. Sessions on personality development, Values & Ethics is the need of the day for the overall development of girl students.

l) END PROJECT DELIVERABLES

In this project an initiation was taken to analyze the career path of women engineers in Engineering colleges. During the data collection the interaction with the students and faculty members about their career path was discussed. From the study students tend to join Master degree programs from the Bachelors degree which is an important deliverable for the study and also Faculty members tend to join Doctoral programs which is also a vital point to note from this study.

m) KEY OUTCOMES OF THE PROJECT

- a) Fostering technical education
- b) Special Government Schemes for girl students in rural areas
- c) Motivation to non technical students for undertaking higher degree programs
- d) It helps in creating over all development of the society

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ANNEXURE

DST/NSTMIS/05/233/2016-17
Government of India
Ministry of Science & Technology
Department of Science & Technology
CHORD Division

Technology Bhavan
New Mehrauli Road
New Delhi-110 016
Dated: 13.03.2018

ORDER

Sub: Financial approval of the project under National Science and Technology Management Information System (NSTMIS) Scheme entitled "Analysis of career path of Women engineers in India"

Pl: Dr P Anuradha, Associate Professor, Sri Vishnu Educational Society, Hyderabad-500090, Telangana.

Sanction of the President is here by accorded to the above mentioned project at a total cost of ₹27,32,400/- (Rupees Twenty Seven Lac Thirty Two Thousand Four Hundred only) for a duration of Three years. The items of expenditure for which the total allocation of ₹ 27,32,400/- has been approved for Three years are given below:

Sl. No.	Heads	1 st Year	2 nd Year	3 rd Year	Total
A.	Computer with accessories, Software	2,00,000/-	-----	-----	2,00,000/-
B.	Fellowship: Project Assistant-2 @ Rs 22,000/- (Consolidated)	5,28,000/-	5,28,000/-	5,28,000/-	15,84,000/-
C.	Consumables	50,000/-	50,000/-	50,000/-	1,50,000/-
D.	Other Costs (for LPAC meeting)	40,000/-	30,000/-	30,000/-	1,00,000/-
E.	Travel	1,50,000/-	1,50,000/-	1,50,000/-	4,50,000/-
F.	Overhead	1,00,000/-	74,200/-	74,200/-	2,48,400/-
G.	GRAND TOTAL	10,68,000/-	8,32,200/-	8,32,200/-	27,32,400/-

2. Overhead expenses are meant for the host institute towards the cost for providing infrastructure facilities and benefits to the staff engaged in the project, etc.

3. Sanction of the grant is subject to the conditions as detailed in website www.dst.gov.in.

4. Sanction of the President is accorded to the payment of ₹10,68,000/- (Rupees Ten Lac Sixty Eight Thousand only) under 'Grant-in-aid General' to the Principal, Sri Vishnu Educational Society, Hyderabad-500090 being first installment of grant for the year 2017-2018 for implementation of the said research project.

5. The grantee organization will maintain separate audited account for the project and the entire amount of grant will be kept in an interest bearing bank account. The interest earned / accrued should be reported to DST (financial year wise) while submitting the Statement of Expenditure/Utilization Certificate. The interest thus earned will be treated as a credit to the grantee organization, which will be adjusted towards future release of grant.

6. This sanction is subject to the condition that the grantee organization will furnish to the Department of Science & technology, financial year wise Utilization Certificate (UC) in the proforma prescribed as per GFR 2017 and audited statement of expenditure (SE) along with up to date progress report at the end of each financial year duly reflecting the interest earned / accrued on the grants received under the project. This is also subject to the condition of submission of the final statement of expenditure, utilization certificate and project completion report within one year from the scheduled date of completion of the project.

7. The grantee organization will have to enter & upload the Utilization Certificate in the PFMS portal besides sending it in physical form to this Division. The subsequent/final instalment will be released only after confirmation of the acceptance of the UC by the Division and entry of previous Utilization Certificate in the PFMS.

8. If the grant has been released under capital head through separate sanction order under the same project for purchase of equipment(s), separate SE/UC has to be furnished for the released Capital head grant.

Contd..

9. The grant-in-aid being released is subject to the condition that:
- (a) A transparent procurement procedure in line with the Provisions of General Financial Rules 2017 will be followed by the Institute/ Organization under the appropriate rules of the grantee organization while procuring capital assets sanctioned for the above mentioned project and a certificate to this effect will be submitted by the Grantee organization immediately on receipt of the grant.
- (b) While submitting Utilization Certificate/Statement of Expenditure, the organization has to ensure submission of supporting documentary evidences with regard to purchase of equipment/capital assets as per the provisions of GFR 2017. Subsequent release of grant under the project shall be considered only on receipt of the said document.

10. DST reserves sole rights on the assets created out of grants. Assets acquired wholly or substantially out of government grants (except those declared as obsolete and unserviceable or condemned in accordance with the procedure laid down in GFR 2017), shall not be disposed of without obtaining the prior approval of DST.

11. The account of the grantee organization shall be open to inspection by the sanctioning authority and audit (both by C& AG of India and Internal Audit by the Principal Accounts Office of the DST), whenever the organization is called upon to do so, as laid down under Rule 236(1) of General Financial Rules 2017.

12. Principal Investigator (PI) is directed to acknowledge "research grant" in all publications emerging out of this particular project. For example, "Authors acknowledge Department of Science and Technology, Government of India for financial support vide Reference No. under NSTMIS to carry out this work."

13. Failure to comply with the terms and conditions of the Bond will entail full refund with interest in terms of Rule 231 (2) of GFR 2017.

14. The expenditure involved is debitable to Demand No.84, Department of Science & Technology for the year 2017-18:

3425	Other Scientific Research (Major Head)
60	Others (Sub-major Head)
60.200	Assistance to other Scientific Bodies (Minor Head)
68	Science & Technology Institutional and Human Capacity Building
68.00	Policy Research Cell
68.00.31	Grants-in-aid General for the year 2017-18 (Voted)

(Previous: Policy Research Cell 3425.60.200.54.01.31)


15. The amount of ₹10,68,000/- (Rupees Ten Lac Sixty Eight Thousand only) as recurring grant will be drawn by the Drawing and Disbursing Officer of the Department of Science & Technology and will be disbursed to the Principal, Sri Vishnu Educational Society, Hyderabad-500090 by means of electronic transfer as per the details given below:

Institute Name : Sri Vishnu Educational Society
 Bank Name : Indian Bank
 Account No : 713333699
 Branch : Hyderabad
 IFSC Code : IDBI00S052

16. As per Rule 234 of GFR 2017, this sanction has been entered at S. No. 41 in the register of grants maintained in the CHORD division

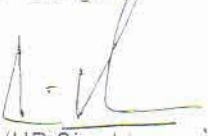
17. This issues with the concurrence of IFD Vide their Concurrence Dy. No5301/2017-18 dated 09.03.2018

18. The institute is registered under Niti-Ayog Darpan Portal and unique ID is AP/2016/0103731.


 (HB Singh)
 Scientist-E

Copy forwarded for information and necessary action to:-

1. The Director of Audit (CW & M-II), AGOR Building, IP Estate, New Delhi-110 002.
2. Copy with two spare copies of the sanction to the DDO, DST Cash Section.
3. The Principal, Sri Vishnu Educational Society, Hyderabad-500090.
4. Dr P Anuradha, Associate Professor, Sri Vishnu Educational Society, Hyderabad-500090, Telangana
5. Pay & Accounts Officer, DST, New Delhi.
6. Accounts Section, DST, New Delhi.
7. Sanction Folder.
8. IFD, DST, New Delhi.


 (HB Singh)
 Scientist-E