

Enhancing Engagement of Marginalized Girls in IT Education: An Inclusive Approach

Report of Research Project submitted

to

Maharashtra State Commission for Women

Assistance for Research Projects

by

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Preface

Education for women is an essential determinant of their enhanced confidence and self-esteem, constructing a positive image, building up their capacity to think critically, encouraging better decision making and helping them settle on more informed decisions about wellbeing, employment and even the education of their children. Education won't just guarantee more interest in formative procedures yet additionally improve familiarity with rights and privileges in society, so women can upgrade their participation in society on an equivalent balance in all regions. The monetary freedom that education brings is an additional motivation. Financial freedom and awareness will help reduce the endless loop of fortifying negative generalizations and help women in sanctioning ways as people in their own right, adding to society, polity and the economy.

In the backdrop of this, the present report portrays the research project entitled “Enhancing Engagement of Marginalized Girl Students in IT Education: An Inclusive Approach” funded by “Maharashtra State Commission for Women, Mumbai”. This project aimed at undertaking study of marginalized girls pursuing IT education in the jurisdiction of Shivaji University.

The report portrays enhancing engagement of marginalized girl students in IT education. The organization of this project report is as follows:

- Chapter 1 introduces the notion of the project such as preamble, statement of the problem, objectives, methodology, significance and limitations of the study
- Chapter 2 presents an in depth literature survey on the theme of investigation. This is followed by research design and data collection by employing structured questionnaire.
- Chapter 3 reports the research methodology followed in carrying out the present study.
- Chapter 4 reveals thorough data analysis, interpretation and findings of the present study.

- Chapter 5 gives summary of this project and discusses issues emerging out of the research work.
- Annexure I lists the colleges where the field investigation is carried out for the present study
- Annexure II contains the questionnaire

The outcome of the research, as presented in this report emphatically presents the need of enhancing engagement of marginalized girls in IT education. The fundamental target of the proposed research is to undertake the study of marginalized girls pursuing IT education in the jurisdiction of Shivaji University. This exploration is presented in this report in detail. This report turned out to a rich presentation for administrators in the higher education arena, policy makers and any person who is unequivocally disposed to take up research in this domain. Last but not the least, this report will undoubtedly be a value addition to the world of Women Empowerment.

Dr. R. S. Kamath
Project Director

Acknowledgement

Success of this research would not have been the same without the guidance, support, encouragement, friendship and love of many wonderful people. I wish to express my appreciation to everyone.

First off all, this research would not have been culminated without the financial support by Maharashtra State Commission for Women, Mumbai. On behalf of CSIBER Kolhapur, I would like to express special thanks to “Maharashtra State Commission for Women, Mumbai” for the funding of this project.

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I would also like to express my deep appreciation to my family members for their moral support and inspiration throughout the course of this research. Last and not least: I beg forgiveness of all those who have been with me over the course of this work and whose names I have failed to mention.

Dr. R. S. Kamath

Project Director

Executive Summary

Introduction

Education is a vital tool that empowers women and girls to partake in choices that influence their lives and in enhancing their economic wellbeing. Investing in girls' education can change the lives of women around the globe, and furthermore advantage different individuals and areas of society. Women in the innovation area drive development for countries that are booming monetarily. Engaging more number of marginalized girls in IT education can unfold a number of opportunities for their growth, innovation and success.

Present report portrays the research project entitled “Enhancing Engagement of Marginalized Girl Students in IT Education: An Inclusive Approach” funded by “Maharashtra State Commission for Women, Mumbai”. This project aimed at undertaking study of marginalized girls pursuing IT education in the jurisdiction of Shivaji University.

Objectives

The intent of this project is to enhance engagement of marginalized girls in IT education with inclusive approach. Following are the objectives of the investigations taken up in this research:

- Study the current status of marginalized girl students in IT education
- Study how the different factors affect the education of the marginalized girls
- Know awareness of marginalized girls regarding career opportunities in IT
- Make marginalized girls proficient with the different avenues for self employment
- Engage marginalized girls and women in developing positive strategies towards IT education, financial stability;
- Develop an ongoing dialogue between the educational institutes and marginalized girls to provide mentorship to improve understanding and engagement.

Research Design and Methodology

This project seeks to engage more number of marginalized girls in IT education. In phase-I, study of current status of marginalized girls pursuing IT education in the jurisdiction of Shivaji University is conducted using survey method. In phase – II, a one day workshop is conducted to create awareness about Career Opportunities in IT and make them know about various avenues for Self Employment.

Geographical area covered for the study is the jurisdiction of Shivaji University Kolhapur which is spread over three districts viz. Kolhapur, Sangli and Satara. The marginalized girls pursuing B.C.A. or B.C.S. or B.Sc. or B.E. or B.Tech. in Computer Science were the target group studied for the present research. Marginalized is defined as reserved category community such as SC, ST, OBC, SBC, NT, VJDT.

For the present study, primary data collected through survey method. The two stage sampling techniques followed for the selection of sample of colleges and respondents from the selected colleges. Simple Random Sampling and Purposive Sampling techniques are used for sampling design. Thus 300 respondents selected from these colleges. The questionnaire tool, the prime instrument of data collection was adopted for the study. A well designed structured questionnaire was used for the data collection.

Based on the objectives of the study and literature survey, the following components are identified for the design of structured questionnaire:

- Personal information
- Family details
- Parental support and awareness regarding IT education
- Learning environment at educational organizations
- Awareness of cutting edge technologies and career opportunities

Pilot test is conducted to improve the quality of questionnaire to remove the weaknesses, misconceptions and ambiguities of the questionnaire. Data collection for the

present investigation carried out in the month February 2018. Teams of field investigators for three districts were formed for data collection. Project director oriented these investigators with problem of the study, objectives, and details of questionnaire, target group etc. The survey team members personally visited the respective colleges and distributed the questionnaires among the participants.

Data Analysis and Findings

After the collection of data, data analysis was initiated. i.e. the collected data was organized, tabulated and analyzed. Further the responses were elaborated through charts and graphs. Microsoft Excel and SPSS are used for the present data analysis.

Following are the major findings about marginalized girl students pursuing undergraduate IT education in the jurisdiction of Shivaji University, are surfaced out of the present investigation:

- i. Most of the girls from marginalized community pursuing IT education belongs to OBC category
- ii. Majority of them are from rural background. This implies progress of families from rural area towards education in IT for their girls
- iii. Amongst respondents, majority of them have secured First Class in previous semester examination. This indicated their interest towards learning.
- iv. Most (45%) of them are self motivated to join their current course. 33% of students are encouraged by their parents. This shows parental interest in girls' education and their career.
- v. While analyzing the data, it was found that most of the students' educational expenses are borne by their parents.
- vi. The total monthly income of the majority of these girls' families falls under the category "Below Rs.10,000-".
- vii. The study revealed that majority of these girls' parents planning for job after graduation.
- viii. While analyzing data, it was found that majority of the students are not getting scholarship in time.

- ix. Most of them are satisfied with the support by teachers in case of difficulties in any subjects.
- x. Merely half of the respondents agreed that they have experienced discrimination
- xi. Almost all of them are confident in learning latest technologies for better career. This reveals positive strategy of these students towards IT education and career.
- xii. Most of the respondents don't have facility such as Desktop/Laptop at home for practice
- xiii. Very few students are enrolled for online course, it is obvious because most of them are not aware of online courses
- xiv. Regarding future goals of these girls, most of them planning for job. Very few are interested in marriage immediately after graduation.
- xv. Majority of these students are not completely aware of career opportunities after graduation, employability in Mobile App Development and employability in Data Mining
- xvi. Govt. of India has launched Stand Up India Scheme in the year 2016. These students are not aware of this scheme in detail
- xvii. Majority of them willing to join as "Developer/ Programmer" in IT sector

Summary and Conclusion

The prime objective of this research i.e. "undertaking the study of marginalized girls in IT education" is accomplished by following appropriate research methodology, data collection and analysis of the data. Survey method with Questionnaire as Data Collection tool is used in the present investigation. After the collection of data, it was organized, tabulated and analyzed. Research has identified major findings and reported.

In light of these findings and in order to better prepare for the steps, recommendations further developed in the report are highlighted as necessary for the improvement of the society as well as nation. Following are the few such recommendations surfaced out of the present investigation:

1. The concerned Government body or educational organizations should take care of organizing programmes to create awareness about Self Employment, Stand Up India Scheme among these marginalized girls of the present study
2. College authority should take some measures to handle discriminations that these girls are experiencing
3. Government should make some provision for providing Desktop/Laptop for these girls at home for practice
4. Educational institutes or other agencies need to create awareness about Online Courses which aids in better career
5. Additional or remedial coaching is expected to improve these students performances in their regular studies
6. Central, State, Local government must take some measures to motivate these girls for higher education in IT, career in IT as additional steps towards Women Empowerment
7. Parental awareness about education and career in IT is essential. Authorities should plan some programmes for the same.
8. There are students not getting scholarship in time. Government should take some measures for this

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Chapter 1

INTRODUCTION

Mother Teresa

“She always dreamt of a world where no one is left unwanted, unloved or uncared. And it was this profound empathy, unwavering commitment and unshakable faith in humanity that urged her to”

1.1 Introduction

Education is an imperative tool that empowers women and young girls to take an interest in decisions that influence their lives and in enhancing their economic wellbeing [7]. Investing in girls' education can change the lives of women around the globe, and furthermore advantage different individuals and parts of the society. Women in the technology sector drive development for countries that are booming financially. Expanding work open doors for women additionally improves gender equality, which is central to securing human rights and respect. Enabling women prompts benefits for their kids and groups since ladies frequently put cash once again into their family units and towns. The strengthening of women and girls ought to stay at the front line of the worldwide education motivation.

Despite the fact that the world economy has formed into worldwide economy, in both developed and developing countries women have been stifled in all kinds of different backgrounds for ages. Still gender bias inclination and convictions are playing as boss snags for the development of women strengthening around the world. Women empowerment is far less demanding said than done [6]. This in a specific regard requests a progressive change in the socio social estimations of the general public. Training has been perceived as a fundamental specialist of social change and improvement in any general public and any nation. It is appropriately said that to educate the women is to educate the entire family. In the cutting edge world, there are no spaces of work that women haven't dug into.

1.1.1 “Education for All”

The key challenge is to guarantee that the expansive vision of Education for All as a comprehensive idea is reflected in national government and subsidizing office arrangements. Education for All ... must assess the need of poor people and the most distraught, including working youngsters, remote rustic occupants and migrants, and ethnic and semantic minorities, kids, youngsters and grown-ups influenced by struggle, HIV/AIDS, hunger and poor health; and those with exceptional adapting needs... "

Inclusion is viewed as a procedure of tending to and reacting to the decent variety of requirements of all learners through expanding cooperation in learning, societies and groups, and decreasing rejection inside and from instruction. It includes changes and alterations in content, methodologies, structures and procedures, with a typical vision which covers all offspring of the proper age go and a conviction that it is the obligation of the customary framework to teach all youngsters. Inclusive education is worried about giving suitable reactions to the expansive range of adapting needs in formal and non-formal instructive settings. As opposed to being a minor subject on how a few learners can be coordinated in the mainstream education, inclusive education is an approach that investigates how to change education frameworks keeping in mind the end goal to react to the assorted variety of students. It intends to empower the both teachers and learners to feel great with decent variety and to consider it to be a test and enhancement in the learning condition, as opposed to an issue [2].

1.1.2 Marginalized Girls’ Lives

Studies propose that these young ladies' burden is the consequence of the connection of a scope of elements implanted in both the socialization and learning forms. These incorporate social, cultural and gender norms, which impact the way these girls are brought up, learn and interact with guardians, family, companions, educators and the more extensive group, and which shape their character, convictions, conduct and decisions. Self-determination inclination, when girls and women picked not to seek after investigations or professions, seems to assume a key part. Marginalized girls are often raised to trust that advanced education isn't for them and their capacity in this field is

intrinsically second rate compared to others. This can undermine girls' certainty, intrigue and readiness to participate in advanced education and expert courses.

Livelihood can be defined in-terms of capabilities, resources, and opportunities that enable people to achieve their goals [1]:

- Resources includes social and financial assets
- Capabilities include health, skill, confidence etc
- Opportunities are activities to generate assets

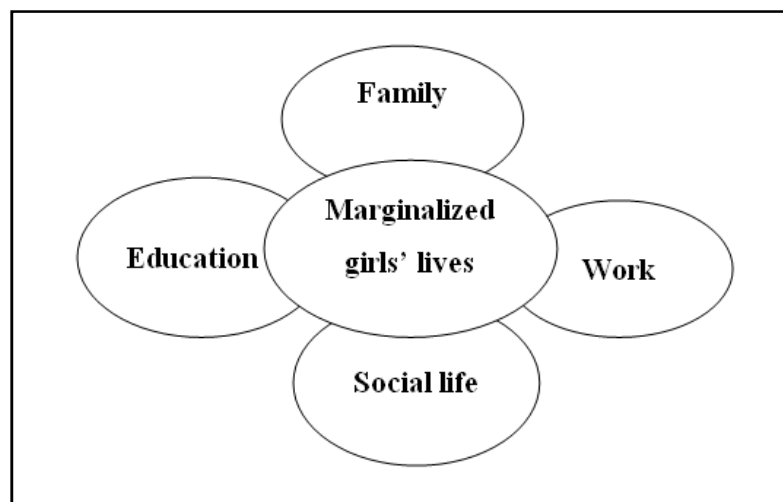


Figure 1.1: Marginalized girls' lives

Figure 1.1 shows marginalized girls' lives include family, work education and social life. In some cases family and work demands overlap and dominate much of their lives, education plays a lesser role and social life particularly with peers plays a smaller role [1]. Girls in India are often denied education on account of prevalent social and cultural discrimination. Investment in girls' education leads to high social returns.

1.1.3 Positive Discrimination

Positive Discrimination is some exceptional benefits and reservation offered to the marginalized groups, in various developmental regions like education, employment, administration and so on to bring them, as well, into the mainstream of the general public.

It is otherwise called compensatory discrimination on the contention that they were minimized by virtue of various verifiable and social components.

The provisions and privileges that Indian Constitution offers to the marginalized groups as a part of Positive Discrimination Policy are as follows [3]:

- Article 14 offers special privileges for the Marginalized Groups.
- Indian Constitution says that the state shall not misinterpret the main clause of the Article 15 and clause (2) of the Article 29 for denying the special provision for the marginalized ones.
- Article 17 strictly prohibits segregation on the basis of religion or cast or such issue in classrooms and school campuses, which often make students from such circumstances stop their education uncompleted
- Article 30 ensures that the people of Minority groups also get enough opportunity for gaining proper education so that to be a part of the mainstream
- S497 of IPC says that people of different circumstances may not be treated in the same manner

1.1.4 Women as Marginalized Group

The status of women amid Vedic Age is seen through two dimensions: Some view that they delighted in high position while some others are of the view that they were extremely isolated by the male predominant society. Another view is that they had been equivalent to men during early Vedic Age while their status got decayed amid the later Vedic Age [3].

On the off chance that it is seen through a traditionalist's view one can see that women appreciated higher status that individuals offered them every one of the sorts of respect and regard as a mother, spouse and girl, and they were given education restrictive to them, which focused on the obligations of women to husbands, religious ceremonies and so on. On the off chance that you take a gander at it through an innovator's eye, you will state that such a regard itself is a piece of fraud that they were compelling them sit at the chambers at home by giving such a 'regard'.

1.1.5 Empower Girls' in the Marginalized Communities through Education

To change the disposition of various advancement systems that neglect to perceive the benefit of teaching girls; that they may enhance their job and remain without anyone else against separation in their lives. To address basic requirements for women empowerment; it is required to build up women's fundamental abilities in proficiency and employments as they need to take care of their youngsters and spotlight on Girls Education [8]. IT proficiency and profession in IT can unfurl array of chances for these girls. Enabling girls in the minimized groups through training could enhance societal improvement and personal satisfaction. Girls without anyone else's input would enhance the quality and viability of their social and instructive status and have great employment status.

1.2 Statement of the problem

Engaging more number of marginalized girls in IT education can unfurl various opportunities for their growth, innovation and success. Studies propose that these girls' inconvenience is the aftereffect of the association of a scope of components implanted in both the socialization and learning forms. Self-selection bias, when girls and women picked not to pursue studies or careers, seems to assume a key part. Marginalized girls are regularly raised to trust that higher education isn't for them and their capacity in this field is naturally second rate compared to others. This can undermine young ladies' certainty, intrigue and ability to participate in advanced education and expert courses. Hence the present study **“Enhancing Engagement of Marginalized Girl Students in IT Education: An Inclusive Approach”** aims at undertaking study of marginalized girls pursuing IT education in the jurisdiction of Shivaji University.

1.2.1 Defining Marginalized

Marginalization is compelling a person or a specific group of a particular society to be far from the mainstream of the society by denying him or her every one of the rights and opportunities for developing himself or herself by getting education and partaking in such formative exercises.

The prime objective of this research is to study the current status of marginalized girl students pursuing IT education. However, defining what should consider circumstances of marginalized is both challenged and variable as indicated by the specific situation. In the field of Sociology, static meanings of marginalization alluding to destitution level have offered approach to dynamic investigations of how political, social and monetary procedures of social drawback make conditions of prohibition. The girl students belongs to reserved category such as SC, ST, OBC, SBC, NT, VJDT pursuing IT education in the jurisdiction of Shivaji University considered for the study.

1.2.2 Shivaji University Jurisdiction

The jurisdiction of the Shivaji University is spread over three districts viz. Kolhapur, Sangli and Satara with 280 affiliated colleges and recognized institutes [5]. Table 1.1 brief about number of colleges providing IT Education in the jurisdiction of Shivaji University. This locale of Maharashtra brags about rich and differed socio-social legacy. The university which was established principally to take into account the provincial yearnings has now equipped to transcend this regional image and rising as one of the premier institutes of higher education and research in India.

Table 1.1: No. of Colleges providing IT Education in Shivaji University Jurisdiction

District	BCA or/and BCS or/and BSc	B.E./B.Tech Computer Science	Total
Kolhapur	21	16	37
Sangli	25	10	35
Satara	16	10	26

1.3 Objectives

The intent of this project is to enhance engagement of marginalized girls in IT education with inclusive approach. The purpose of this study is to discover answers to questions through the application of scientific procedures.

Following are the objectives of the investigations taken up in this research:

- Study the current status of marginalized girl students in IT education
- Study how the different factors affect the education of the marginalized girls
- Know awareness of marginalized girls regarding career opportunities in IT
- Make marginalized girls proficient with the different avenues for self employment
- Engage marginalized girls and women in developing positive strategies towards IT education, financial stability;
- Develop an ongoing dialogue between the educational institutes and marginalized girls to provide mentorship to improve understanding and engagement.

1.4 Methodology

The research methodology comprises of the phase wise division of the work to be undertaken. It is the process of collecting required data, data analysis and to provide useful results. This project seeks to engage more number of marginalized girls in IT education. In phase I, study of marginalized girls pursuing IT education in the jurisdiction of Shivaji University is conducted using survey method. In phase – II, a one day workshop is conducted to create awareness about Career Opportunities in IT and make them know about various avenues for Self Employment.

The key highlights of the methodology followed for this project is as follows:

- Geographical area covered for the study is the jurisdiction of Shivaji University Kolhapur, i.e. Kolhapur, Sangli and Satara.
- The marginalized girl students pursuing B.C.A. or B.C.S. or B.Sc. or B.E. or B.Tech. in Computer Science is the target group studied for the present research
- Given the size and scope of overall project, data collection tools such as questionnaire, personal interviews are used for the study
- A team of field investigators who are having experience of data collection are appointed and the team has collected data required for the study
- A one day workshop is organized to create awareness regarding career opportunities in IT, different avenues for self employment in IT, develop an ongoing dialogue between experts and marginalized girls

- To address critical needs for functional literacy and women empowerment; the workshop developed positive strategies towards IT education, leadership approach, entrepreneurship among marginalized girls.

This project sets out some key facts about the status of marginalized girls' pursuing IT education in the jurisdiction of Shivaji University, and the scale of the problem.

1.5 Significance of the study

Women empowerment is women ability to take part as equivalent accomplices in social, financial and political frameworks of a society where women can settle on independent decisions on their self-awareness [6]. This can just happen if there is a channelized course for the empowerment of women. Education is one of the challenges that are as of now tormenting the issues of women's rights in the instruction. Government has propelled different plans to help ladies who have a place with underestimated bunches that they require keeping in mind the end goal to be effective [6].

Engaging more number of marginalized girls in IT education can unfurl various opportunities for their development, advancement and achievement. The research goes for undertaking study of marginalized girls pursuing IT education in the jurisdiction of Shivaji University. This study also focuses on different factors affect the education of the marginalized girls, know awareness of marginalized girls regarding career opportunities in IT and hence make marginalized girls proficient with the different avenues for self employment and career opportunities in IT.

1.6 Conceptual Clarification

The empowerment of marginalized girls could be a one of the answers for taking care of marginalized girls' education challenges. The vocational training courses on expertise improvement can help in bringing positive systems towards financial stability. Information Technology (IT) education gives students learning, abilities, and demeanor required for comprehensive and economical social orders. The opportunities in IT sector,

can give square with development, as well as go about as a facilitator to expand the organization of young ladies over their lives [9]. Significant concern is to address upgrading investment and learning accomplishments of marginalized girl understudies in IT education. There is a need of inventive methodologies and techniques expect to enhance marginalized girls' entrance to quality education. The proposed research aims to decipher the factors that facilitate marginalized girls' participation in IT education, developing positive strategies towards IT education.

1.7 Limitations of the study

Reaching to groups to pursue educational and more generally development efforts is a confounded undertaking. The advancement of the society alone could accomplish positive patterns in education. While educators and teachers have little control over the political and security flow, their principle challenge is to guarantee that women's education can contribute exceptional advance in the society.

The project aimed at engaging enhancement of marginalized girls pursuing IT education in the jurisdiction of Shivaji University. The jurisdiction of the Shivaji University is spread over three districts viz. Kolhapur, Sangli and Satara. The project is expected to understand the current status of marginalized girls pursuing IT education and to bring light of career opportunities in IT education to marginalized girls.

Following are the few limitation of this research:

- Due to the vastness of the topic it is not possible to cover all the aspect within a limited time period therefore this research is strictly conducted in the jurisdiction of Shivaji University only.
- This study covered undergraduate students pursuing B.C.A. or B.C.S. or B.Sc. or B.E. or B.Tech. in Computer Science in the jurisdiction of Shivaji University.

1.8 Organization of the report

The report portrays enhancing engagement of marginalized girl students in IT education. The organization of this report is as follows:

- Chapter 1 introduces the notion of the project such as preamble, statement of the problem, objectives, methodology, significance and limitations of the study
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Chapter 2

REVIEW OF LITERATURE: PRIOR ART VIS-À-VIS OF RESEARCH

2.1 Introduction

One the very pinnacle of issues confronting the world today is the developing number of female who are barred from meaningful participation in the financial, social, political, social and instructive existence of their groups. It is perceived that present systems and projects are inadequate with respect to requirements of female who are defenseless against marginalization and exclusion. There are different projects, plans; associations focusing on different marginalized and excluded bunches do exist, doing awesome [3]. This chapter explores the associated literature survey and prior art.

The aim of the literature review is to identify potential information gaps and refine the extent of the exploration for both the contributor and the implementer, so as to elucidate potential hazy areas. This study is supported by referring about 50 research articles. Few of the selected references for broad outline are mentioned here. Literature survey reveals scope for Women Empowerment by Enhancing engagement of marginalized girls in IT Education.

2.2 Enhancing Accessibility of Education for Marginalized Girls

The baseline evaluation report by Samuel Hall explains ACTED's GEC implementation programme in Faryab [1]. The data collection and analysis have highlighted several interesting findings at the current baseline stage and recommendations such as learning process should be student oriented, NGOs could be effective in reaching the most marginalized etc. The key barriers to accessing education for girls as per the summary of ACTED theory of change are as follows:

1. Lack of separate, high-quality female education facilities
2. Insecurity
3. Lack of quality teaching
4. Conservatism
5. Household poverty

CARE India's Girl Education Program centers on enhancing the openness of value training of marginalized girls [2]. It is submitted towards empowering powerful execution of education arrangements and approaches for rights, privileges and empowerment of girls from most marginalized areas of the general public in protected and secure, comprehensive and gender responsive environments. The key projects of CARE India under education sector are:

- Khushi: Early Childhood Care and Education (ECCE)
- Sampurna: Life Cycle Intervention for Adolescent girls and Women
- Maitri: Regional Advocacy on safe and secure education
- Promoting Age and Grade Appropriate Training Interventions (PRAGATHI)
- Udaan- Special Residential Learning for out-of-school girls
- Teachers Resource Laboratory: Building Teachers' Capacities

Yet another paper by Padhi analyzed the instructive status of tribal groups in Arunachal Pradesh and investigated the imperatives in upgrading the educational levels of this marginalized section [3]. This research aimed to construct a coherent conceptual and logical arrangement structure with a specific end goal to give access and quality in fundamental children and young people, and what it infers for education frameworks so these requirements can be tended to and reacted to in standard of instruction whether it is formal or non-formal.

As clarified in report by UNESCO, inclusive education as an approach tries to address the adapting needs of every one of the a particular spotlight on the individuals who are defenseless against underestimation and rejection [4]. The guideline of comprehensive instruction was received at the Salamanca World Conference on Special Needs Education, UNESCO, 1994. Inclusive education implies that "... Schools ought to oblige all kids paying little heed to their physical, scholarly, social, enthusiastic, semantic or different conditions. This ought to disabled and gifted youngsters, street and working children, children from remote or nomadic populaces, children from linguistic, ethnic or social minorities and kids from other burdened or underestimated regions or gatherings".

Yet another paper by Tinnari reports a study carried out to investigate impact of government's initiatives on girls' education in Haryana [5]. The study analyzed the education component of the Integrated Women's Empowerment Development Programme (IWEDP) under which some inducements were given to encourage parents to send their girls to schools, and to help them continue up to higher secondary level.

2.3 Empowering Marginalized Girls

"Empowering Marginalized Girls" is a project in northern Afghanistan as an action towards girls' education challenges [6]. This project enrolled more than 15,000 girls from rural villages in safe, girl-friendly formal and informal learning environments. The project offered three different educational opportunities:

- Primary Schooling
- Literacy and numeracy courses
- Vocational training courses

The 'Plan for Every Child – Leave No Girl Behind' campaign by Ministry of Women and Child Development underpins the 2030 sustainable development objectives for children's rights with an exceptional accentuation on equity for young ladies [7]. This campaign tries to guarantee that legislature and common society meet up to give chances to scale best practices, outline specific plans and promoter towards gender transformative changes at all levels, to address all requirements for a more fair world for young ladies as a rule and for girls in troublesome conditions, specifically.

The investigation by MHRD, directed in 1999, was done to delineate encounters in instructing immature girls in five states to be specific Andhra Pradesh, Bihar, Delhi, Rajasthan and Uttar Pradesh [8]. Study has gathered information and analyzed. Focused discussions and meetings have uncovered energy and commitment of the young ladies, which was upgraded by impression of education as significant, important and engaging. Affectability of the program assumed a part in guaranteeing enrolment and maintenance in the camps. The adaptable educational programs and camp approach calmed girls from day by day obligations and helped them to learn speedier. Social cognizance and gender

sensitivity were created. The maintenance of girls from changing social foundations in the camp was made conceivable.

Yet another paper by Nayar reports a study was led in 44 low female proficiency regions of 8 states of India, to be specific Madhya Pradesh, Orissa, Haryana, Assam, Karnataka, Tamil Nadu, Maharashtra and Kerala, to distinguish regions of mediation for universalizing primary education among girls with center around ladies' uniformity and empowerment [9]. Study uncovered that cooperation of ladies in instructive organization is unimportant in many areas. Concentrate found that parental inspiration and training, trailed by monetary status of the family, were the key elements for duration of young ladies in schools. The principle purposes behind young ladies dropping out of school were observed to be destitution of the family unit, and gender based division of work and assets.

2.4 Empowerment of Women in Education Sector

A Workshop report by The Population Council endeavors to feature the "basic inquiries, fundamental tools" topic by confining its account around the inquiries [10]. Incidental "toolboxes" light up inquire about issues for thought. Researchers got some information about quantitative data, for example, tutoring, work, marriage and regenerative wellbeing, what they need for themselves, significance of abilities and so on. The wellsprings of study incorporate demographic and wellbeing overviews, family studies, expectation for everyday comforts estimation study, casual review and so forth.

Researchers have examined the factors that affect girls' education at secondary school level in Karak District, Pakistan [11]. This study has identified various factors that affect girls' education is:

- poor financial status of the parents
- lack of basic facilities
- negative attitudes of parents about girls' education
- unpunctuality of teachers
- unfeasibility of school buildings

- lack of proper security arrangement
- long distance to school etc.

A study by Iqbal reported the function played by empowerment of educated Muslim Women in society and family [12]. The study revealed that the educated Muslim women are not fully empowered unlike the expected.

The research carried out by Patel reported the recent scenario of women education in the backward area of Panchamahar District [13]. This study compared the women Education scenario framework to Rural and Urban area. The study exposed that the most of the schools of Panchamahar District having lower female enrollment ratio, Parents are not aware about government scheme for girls' education etc.

2.5 Women in Technology Project

The Women in Technology Project financed by the Education and Training Foundation has been completed by Coralesce ltd, an educational modules advancement and task administration organization [14]. This report proposes that more girls and ladies are looks to draw in into innovation by building up a two-way street leadership program that spotlights on women pioneers in the part captivating with the innovation business. The point was to assemble authority limit and address significant holes in the workforce. This report uncovers that couple of girls graduating with crucial specialized abilities; the UK economy is feeling the loss of various open doors for development, advancement and achievement.

The UNESCO provide details regarding report on Girls' and Women's training in STEM intends to 'crack the code', or to decipher the elements that encourage young ladies' and women's participation, accomplishment and continuation in STEM education, and what should be possible by the education sector to advance girls' and ladies' enthusiasm for, and engagement with, STEM [15]. The research discoveries feature the need to take a gander at different variables to clarify gender contrasts in STEM. Studies

recommend that young ladies' drawback in STEM is the consequence of the cooperation of a scope of components installed in both the socialization and learning forms.

Accenture Research estimated the pipeline of the female computing workforce by evaluating the relative viability of activities that effect girls' enthusiasm for computing [16]. The report uncovers that the offer of women in computing occupations is in decay and proposes that general access to computing in schools doesn't address the gender gap. Just by fitting courses to girls' particular needs would we be able to support their sense of duty regarding computing.

The study by Faulkner uncovers that particular measures are expected to select more ladies into the ICT profession and to check marginalization inside the profession [17]. Numerous and various techniques are required for different technologies and utilizes, and for various social gatherings

2.6 Girls in Learning Technology

The BRAID (Building, Recruiting, And Inclusion for Diversity) activity, co-drove by AnitaB.org and Harvey Mudd College, propelled in September 2014 in partnership with 15 colleges the country over [18]. BRAID offers support to computer science departments to help expand the level of ladies and underrepresented minority students in their undergraduate computing programs, which will along these lines enhance assorted variety in the computing ability pipeline.

New Jersey Institute of Technology (NJIT), with subsidizing from National Science Foundation (NSF), countering the myth that boys are normally superior to girls in science and math [19]. NJIT's undertaking "Initiative and iSTEAM" for Females in Elementary School to discover viable approaches to exhibit science, innovation, designing and math (STEM) as a collective, imaginative, human rich space, to build the quantity of young ladies intrigued by STEM.

Author has reported best practices adopted by various states for girl child education such as [20]:

- Gram Panchayat model for administration of schools in Himachal
- Promotion of menstrual hygiene scheme in Maharashtra
- Provision of free school bags and note books to SC/ST girls in Karnataka
- International institute for population sciences in Kerala
- Sanitation facility for girls in school in Andhra Pradesh

2.7 Educational Status among Marginalized: Issues and Challenges

Khanday et al announced in their paper that Indian patriarchal culture the ladies' particularly the provincial and inborn face aggressive behavior at home, physical and sexual manhandle, nourishing and mental issues which has a significant impact upon their wellbeing status [21]. The wellbeing status and use examples of ST's and SC's give a sign of their social rejection and additionally a thought of their linkages amongst destitution and wellbeing. From a human right point of view, all subjects ought to get sufficient wellbeing, instruction, nourishment and sustenance, lodging, support, approach treatment, and opportunity from separation and savagery.

Author Tsujita has introduced an outline of the hardship of instruction among ghetto kids matured 5 to 14 in Delhi and to feature the distinction amongst ghetto and other youngsters. [22] This study depends on information gathered from a ghetto overview in Delhi did by the creator and two agents from November 2007 to March 2008. This overview demonstrated that simply finished a large portion of the youngsters is in school, drop-out rate exists among ghetto children.

Nair, a researcher has revealed different issues of ladies' entrance to training in India and suggestions are offered towards enhancing ladies' access to education [23]. The issues concerning ladies' access to training are not uniform crosswise over various stages, professions or geological spread. Author has recommended following three general classifications to enhance women's access to education:

1. Grassroots Level Interventions

2. Strategic Initiatives
3. Enabling Policy Framework

The study by Indian Institute of Education, Pune evaluate the components that brought about dropout of school children with sex differentials [24]. The study was led in 3 regions of Maharashtra viz Akola, Beed and Bhandara and shrouded 24 schools in 24 towns. Information was gathered through review and by talking guardians and group individuals. All these schools were from Standard I to VII. It was discovered that the absence of female teachers in country schools was a genuine impediment to enhancing young ladies' support rates and lessening dropout rates.

2.8 Schemes and Strategies for Women Empowerment in India

The National Resource Center for Women works as a national meeting community for all plans and projects for ladies [25]. It goes about as a focal archive of learning, data, research and information on all gender related issues and is the principle body overhauling the National and State Mission Authority. This commission has around 15 noteworthy services of Indian government as its accomplice. There are number of schemes running under the ladies strengthening mission, and the creator has clarified the few among them.

The study inspected the policies on motivations for young ladies' participation and their implementation procedures in States and UTs [26]. It distinguished elements which added to young ladies' interest in essential training and looked for the conclusion of guardians and town heads about the execution of motivating force conspires in Tamil Nadu and Uttar Pradesh.

2.9 Conclusion

In this literature review, references of the similar work have taken and explained the same with respect to this research. This chapter reviews the most relevant research carried out in this area to date. As a prologue of this literature survey, it has been found

that there is still a great scope for enhancing engagement of marginalized girls in IT education by following an inclusive approach.

In the backdrop the review reported here, the proposed research aims at undertaking study of marginalized girls pursuing IT education in the jurisdiction of Shivaji University. It also decipher the factors that facilitates marginalized girls' participation in IT education. This study focuses to know awareness of marginalized girls regarding career opportunities in IT. In addition to these, this project plan to organize a training programme to make marginalized girls proficient with the different avenues for self employment and career opportunities in IT.

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Chapter 3

RESEARCH METHODOLOGY

3.1 Introduction

Research design is a reasonable structure within which research would be directed. The preparation of such an outline facilitates research to be as productive as conceivable yielding maximal information. In this procedure, the researcher needs to choose about research method that he/she could use in solving the research problem. A preplanned and very much portrayed technique will give the researcher a logical and practical the problem under scrutiny. This chapter explores the methodology carried out for the present study “Enhancing Engagement of Marginalized Girl Students in IT Education”.

Given the size and extent of overall project, researcher has utilized survey method for the present investigation. Hence the data collection tools such as questionnaire, personal interviews are adopted for the study. These were crafted by field investigators with revisions made by researcher in order to ensure access to relevant data. Interviews have been conducted face-to-face by field investigators. This study has obtained informed consent from participants who are marginalized girls pursuing IT education in the jurisdiction of Shivaji University.

3.2 Objectives of the Study

The intent of this project is to enhance engagement of marginalized girls in IT education with inclusive approach. The purpose of this study is to discover answers to questions through the application of scientific procedures. Following are the objectives of the investigations taken up in this research:

- Study the current status of marginalized girl students in IT education
- Study how the different factors affect the education of the marginalized girls
- Know awareness of marginalized girls regarding career opportunities in IT
- Make marginalized girls proficient with the different avenues for self employment

- Engage marginalized girls and women in developing positive strategies towards IT education, financial stability;
- Develop an ongoing dialogue between the educational institutes and marginalized girls to provide mentorship to improve understanding and engagement.

3.3 Geographical Area

Geographical area covered for the study is the jurisdiction of Shivaji University Kolhapur which is spread over three districts viz. Kolhapur, Sangli and Satara with 280 affiliated colleges and recognized institutes. Table 3.1 shows the details of number of Colleges providing IT Education in the jurisdiction of Shivaji University. The marginalized girls pursuing B.C.A. or B.C.S. or B.Sc. or B.E. or B.Tech. in Computer Science are the target group studied for the present research. Marginalized is defined as reserved category community such as SC, ST, OBC, SBC, NT, VJDT.

Table 3.1: No. of Colleges providing IT Education in Shivaji University Jurisdiction

District	BCA or/and BCS or/and BSc	B.E./B.Tech Computer Science	Total
Kolhapur	21	16	37
Sangli	25	10	35
Satara	16	10	26

3.4 Research Design and Sampling

This study is delimited to marginalized girls pursuing Undergraduate level IT Education in the jurisdiction of Shivaji University, is considered as research population of the present study. A population is a well-defined collection of individuals or objects known to have similar characteristics. However, due to the large sizes of population, present study cannot test every individual in the population because it is too expensive and time-consuming. The most common solution here is following sampling techniques.

A sample is simply a subset or representative of the population from which it was drawn. The main function of the sample is to follow the researcher to conduct the study

to individuals from the population so that the results of their study can be used to derive conclusions that will apply to the entire population. Geographical area covered for the study is the jurisdiction of Shivaji University Kolhapur, i.e. Kolhapur, Sangli and Satara. This study is delimited to the marginalized girl students pursuing B.C.A. or B.C.S. or B.Sc. or B.E. or B.Tech. in Computer Science is the target group studied for the present research. The criteria and method used to select target group was prerogative. In order to obtain a representative sample from the population a researcher has employed Simple Random Sampling technique at first stage for the selection of colleges. In this sampling technique, each item is controlled by the same probability.

Two stage sampling techniques were used as follows:

1. In the first stage researcher has obtained the list of colleges providing B.C.A. or B.C.S. or B.Sc. or B.E. or B.Tech. in Computer Science in the jurisdiction of Shivaji University. There are 98 colleges providing IT education in the jurisdiction of Shivaji University. Colleges from each of the three districts are selected by random sampling. In order to ensure adequate representation of the population, the sample was confined to total 24 colleges.
2. In the second stage marginalized girls pursuing IT education from each of these colleges are selected by using purposive sampling for the investigation. Purposive sampling because respondents for the present study are marginalized girls pursuing B.C.A. or B.C.S. or B.Sc. or B.E. or B.Tech. in Computer Science from these colleges. Thus total of 300 respondents are selected from these colleges.

This study was conducted in the month of February 2018, after that students were busy in their theory and practical examinations. The sample size was decided based on the maximum number of survey the field investigators could complete in the specified duration. Annexure I give the list of colleges where field investigation is carried out for the present study.

3.5 Research tools for data collection

In the present investigation, the survey as research tool for data collection is adopted by taking into consideration the nature of investigation, objective and scope of the inquiry, financial resources, available time and the desired degree of accuracy. The main advantage of the survey is to extract the utmost extent of the insight of the target group effectively. The survey based research with the questionnaire as an instrument is fitting for the undertaken study of marginalized girls pursuing IT education in the jurisdiction of Shivaji University.

3.6 Questionnaire Design

In the present investigation, the aforesaid technique has been used effectively by designing well structured questionnaires with blending of flexible, close ended and open ended type questions. Figure 3.1 shows the conceptual model of the present study put forth through structured questionnaire. Based on the objectives of the study and literature survey, the following components are identified for the design of structured questionnaire:

- Personal information
- Family details
- Parental support and awareness regarding IT education
- Learning environment at educational organizations
- Awareness of cutting edge technologies and career opportunities

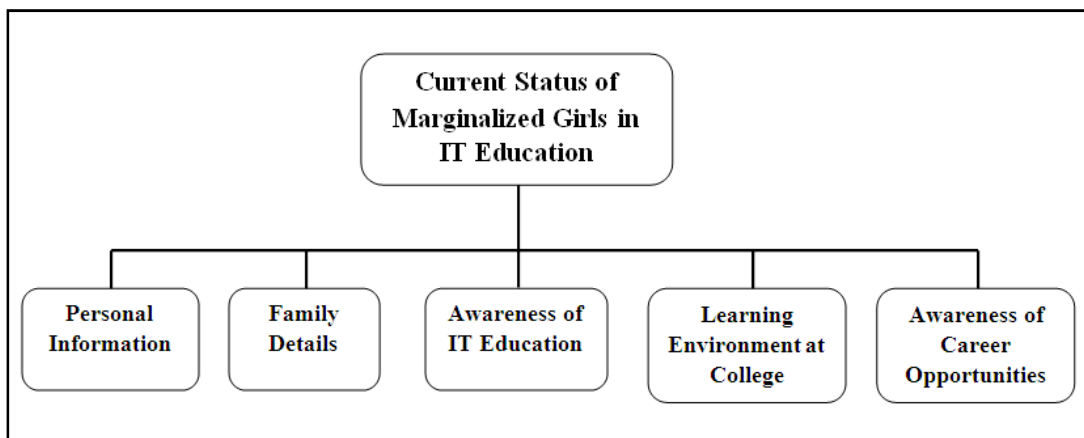


Figure 3.1: Conceptual model of Structured Questionnaire

Figure 3.1 shows conceptual model of the structured questionnaire designed in the present investigation. The above said parameters have been perceived through the structured questionnaire. This questionnaire is included in Annexure – II. This has following parts:

- The first part is introduction and background of the study for motivating the students to complete their responses
- The second part seeks demographic details of the respondent such as name, college, age group, social category, background and so on.
- The third section deals with respondents' educational details such as discipline, performance, reason for joining the course
- The fourth section at the outset tries to know about students' family background, parental support, parent's expectation so on
- The fifth section seeks students' learning environment at college such as cooperation by administration, teachers, classmates followed by students' confidence in learning new technologies
- Section six seeks the awareness of the students' regarding career opportunities in IT, future goals so on
- The questionnaire ends with an open ended question appealing the users to suggest anything which is missed in the questionnaire.

3.7 Pilot Study

Pilot test are conducted to improve quality of questionnaire to remove the weaknesses, misconceptions and ambiguities of the questionnaire. Before commencing the actual survey through questionnaire, a pilot survey with 20 students was conducted. The pilot study ensured confirmation of its understanding amongst the respondents. There were minor corrections. After successful pilot study, the field investigation was initiated.

3.8 Filed Investigation

Data collection for the present investigation carried out in the month February 2018. Field investigators who are having experience of data collection for social science research are appointed. Three teams were formed to visit colleges of three districts such

as Kolhapur, Sangli and Satara. Team leaders are appointed for each of these teams, to coordinate the investigation. Project director oriented all the team members with problem of the study, objectives, details of questionnaire, target group etc for. Project director officially communicated to Principal/Head of the Institutes/Departments for their cooperation in data collection for the project sanctioned by Maharashtra State Commission for Women.

The survey team members personally visited the respective sample colleges and distributed the questionnaires among the participants. Team leaders introduced purpose of field investigation to respondents. Questionnaires were distributed among the participants and responses were recorded. They were asked to give appropriate responses without any hesitation and free of biasness as the data will be used for only research purposes. Field investigation team members helped respondents in filling the questionnaire. Investigators also interacted and interviewed these respondents.

In this way data was collected. Thus the well planned field investigation and its implementation achieved success in data collection for the present study. The details of Field Investigation carried out for the present study is given later in this chapter.

3.9 Processing and analysis of data

After the collection of data, it was organized, tabulated and analyzed. Further the responses were elaborated through charts and graphs. Microsoft Excel and SPSS are used for the present data analysis. The process of analysis is elaborated in Chapter 4.

3.10 Training Program: Economic Integration of Women through Education

It is true that investing in girls' education provides long-term socio-economic returns at good value-for-money for the entire community. So focus should be on developing educational resources, which are believed to deliver positive outcomes in terms of health and socio-economic conditions for women. In order to achieve this, the projects targeting girls and young women need to be executed. Such programs enable

girls and young women who participate to make some contribution to their household income.

In light to this, one day workshop on “Enhancing Engagement of Marginalized Girls in IT Education: An Inclusive Approach” sponsored by “Maharashtra state Commission for Women, Mumbai” was organized at CSIBER, Kolhapur on 8th March, 2018. This programme has created awareness about career opportunities and different avenues for Self Employment in IT among Girls belongs to Marginalized Community, pursuing IT education under the jurisdiction of Shivaji University.

The highlights of this workshop are as follows:

1. Career opportunities in IT
2. E-Learning Modules for enhanced Learning
3. Insights of work from home model
4. Entrepreneurship and financial stability

The details of this Training Programme are given at the end of this chapter.

3.11 Conclusion

The present research aimed at enhancing engagement of girls pursuing IT education by following inclusive approach. This could improve girls’ confidence, interest and willingness to engage in higher education. For the present study, primary data collected through survey method. The procedure of collecting data is elaborated in this chapter.

The prime objective of the study was to know the current status of marginalized girls pursuing IT education. Geographical area covered for the study is the jurisdiction of Shivaji University Kolhapur which is spread over three districts viz. Kolhapur, Sangli and Satara. The marginalized girls pursuing B.C.A. or B.C.S. or B.Sc. or B.E. or B.Tech. in Computer Science were the target group studied for the present research. Marginalized is defined as reserved category community such as SC, ST, OBC, SBC, NT, VJDT. The

two stage sampling techniques followed for the selection of sample of colleges and respondents from the selected colleges. Simple Random Sampling and Purposive Sampling techniques are used for sampling design. The questionnaire tool, the prime instrument of data collection was adopted for the study. A well designed structured questionnaire was used for the data collection. Teams of field investigators for three districts were formed and collected data for this study.

FIELD INVESTIGATION DETAILS

Data collection for the present investigation carried out in the month February 2018. Field investigators who are having experience of data collection for social science research are appointed. Teams were formed to visit colleges of three districts such as Kolhapur, Sangle and Satara. Team leaders are appointed for each of these teams, to coordinate the investigation. Project director oriented all the team members with problem of the study, objectives, details of questionnaire, target group etc for. Project director officially communicated to Principal/Head of the Institutes/Departments for their cooperation in data collection for the project sanctioned by “Maharashtra State Commission for Women”.

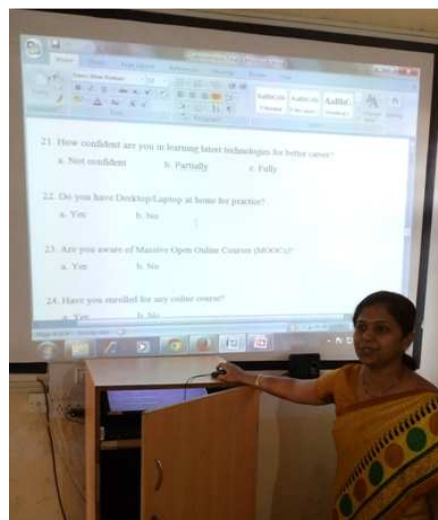
The survey team members personally visited the respective sample colleges and distributed the questionnaires among the participants. Team leaders introduced purpose of field investigation to respondents. Questionnaires were distributed among the participants and responses were recorded. They were asked to give appropriate responses without any hesitation and free of biasness as the data will be used for only research purposes. Field investigation team members helped respondents in filling the questionnaire. Investigators also interacted and interviewed these respondents.

In this way data was collected. Thus the well planned field investigation and its implementation achieved success in data collection for the present study. Selected snapshots of the field investigation carried out are presented in this section.

Field Investigation Orientation and training session by Project Director



Survey planning



Field Investigators

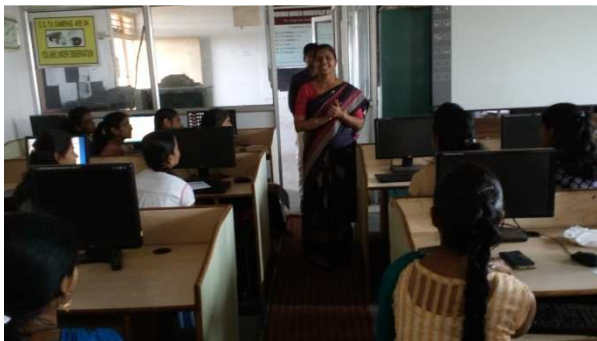


Karmaveer Hire Arts, Science, Commerce and Shikshanshastra Mahavidyalaya, Gargoti

Dattajirao Arts Science Commerce College, Ichalakranji



Interaction at Mandalik Mahavidyalay Murgud



Sanjay Ghodawat Institution, Atigre



Gopal Krishna Gokhale College,
Kolhapur.



Annasaheb Dange College, Hatakanangale.



Sharad Institute of Technology, Yadrav



Ashokrao Mane Group of Institutions,
Vadgaon



Dr. J. J. Magdum College of Engineering,
Jaysingpur



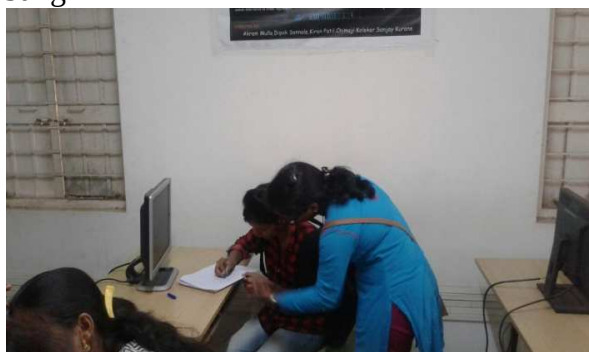
New College, Kolhapur



Shri Shahaji Chh. Mahavidyalaya
Kolhapur



Arts and Commerce College, Kasegaon, Dt.
Sangli



Willingdon Mahavidyalaya, Sangli



Smt. Kusumtai Rajarambapu Patil Kanya Mahavidyalaya, Islampur.



Kasturbai Walchand College, Sangli



Ganapatrao Aarwade College of Commerce, Sangli.



Mudhoji College, Phaltan, Dist.Satara.



DP Bhosale College, Koregaon



Rajendra Mahavidyalaya, Khandala, Dist. Satara.



S. M. Shankarao Mohit Patil Mahavidyalay,
Rahimpur, Satara



Savitribai Phule Mahila Mahavidyalaya,
Satara.



TRAINING PROGRAMME DETAILS

Preamble

It is true that investing in girls' education provides long-term socio-economic returns at good value-for-money for the entire community. So focus should be on developing educational resources, which are believed to deliver positive outcomes in terms of health and socio-economic conditions for women. In order to achieve this, the projects targeting girls and young women need to be executed. Such programs enable girls and young women who participate to make some contribution to their household income.

In light of this, one day workshop on “Enhancing Engagement of Marginalized Girls in IT Education: An Inclusive Approach” sponsored by “Maharashtra state Commission for Women, Mumbai” was organized at CSIBER, Kolhapur on 08th March, 2018. This programme created awareness about career opportunities and different avenues for Self Employment in IT among Girls belongs to Marginalized Community, pursuing IT education under the jurisdiction of Shivaji University.

About CSIBER

Chhatrapati Shahu Institute of Business Education and Research (CSIBER) (www.siberindia.edu.in) was established in 1976 as a post graduate teaching and research institute affiliated to Shivaji University, Kolhapur. The institute is autonomous since 1995. The programmes currently offered by the institute are MBA (Gen), MBA (Env. Mgt), MCA, MSW, M.Sc. (Environment and Safety), M.Sc. (Quantitative Economics), M. Com. and M.Phil. The UGC has granted “College with Potential for Excellence (CPE)” status from the year 2006-07 to 2020-21. CSIBER is re-accredited and conferred A+ Grade in the 3rd cycle of NAAC with CGPA - 3.55.

Workshop Overview and Highlights

The **objective** of this workshop is to create awareness of career opportunities in IT education and develop an ongoing dialogue between experts and marginalized girls. To address critical needs for functional literacy and women empowerment; the workshop

aimed at developing positive strategies towards IT education, leadership approach, entrepreneurship among marginalized girls. The highlights of this workshop are as follows:

1. Career opportunities in IT
2. E-Learning Modules for enhanced Learning
3. Insights of work from home model
4. Different avenues for self employment in IT
5. Entrepreneurship and financial stability

Registration Details

This workshop was organized as a part of project entitled “Enhancing Engagement of Marginalized Girls in IT Education: An Inclusive Approach” funded by “Maharashtra State Commission for Women, Mumbai”. The workshop aimed at orienting girl students belongs to marginalized community pursuing B.C.A./B.C.S./B.Sc. Comp.Sc./B.E. Comp.Sc./B.Tech. Comp.Sc./ from Shivaji University Jurisdiction. 50 such students from 10 colleges were attended this programme. Table 3.3 gives details.

Table 3.2: Participants from Colleges

Sr. No	Name of the College
1	Vivekanand College, Kolhapur
2	Gopal Krishna Gokhale College, Kolhapur.
3	Kamala College, Kolhapur.
4	Kolhapur Institute of Technology's Kolhapur
5	Karmaveer Hire Arts, Science, Commerce and Shikshanshastra Mahavidyalaya, Gargoti
6	Dattajirao Kadam Mahavidyalaya, Ichalkaranji
7	D.R. Mane Mahavidyalaya, Kagal
8	IMRDA, Sangli
9	Smt. Kusumtai Rajarambapu Patil Kanya Mahavidyalaya, Islampur
10	Krishna College Of Commerce and Science, Wathar

Since the programme was funded by “Maharashtra State Commission for Women”, there was no registration fee. Certificate of participation, working lunch were provided to the participants. In addition to this travelling allowance of 100/- per participant was provided to students participated from outskirts of Kolhapur.

Table 3.3: Programme Schedule

Time	Session	Guest/ Resource Person
9:30 – 10:30	Registration	
10:30 - 11:00	Inauguration	Shri. Balasaheb Kamat, Assistant Commissioner, Social Welfare and Social Justice Department, Kolhapur
11:00 – 12:00	Women Empowerment	Ms. Jyoti Bhalkar, Family Counsellor, Highcourt
12:00 – 1:00	Career Opportunities in IT	Ms. Shweta Desai, Manorama Infosystems Ltd. Kolhapur
1:00 – 2:00	Lunch break	
2:00 – 3:00	Self Employment in IT	Ms. Mira Dixit, Tribe Apps Soft, Kolhapur
3:00 – 4:30	e-Learning Modules: Employability in IT	Dr. R.S. Kamath, Associate Professor, Dept. of Computer Studies, CSIBER
4:30 – 5:00	Feedback and Valedictory	Dr. V.M. Hilage, Member, CSIBER Trust

Selected snapshots of the programme are presented in this section.

Workshop e-Inauguration by Shri. Balasaheb Kamat, Assistant Commissioner, Social Welfare and Social Justice Department, Kolhapur



Welcome Song by Students, Dept. of Social Work



Workshop Highlights by Dr. R.S. Kamath, Workshop Coordinator



Chief Guest Felicitation by Dr. M.M. Ali,
Director, CSIBER

Institute Brief by Dr. M.M. Ali, Director,
CSIBER



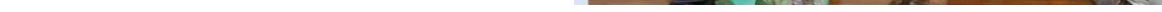
Address by Chief Guest, Shri. Balasaheb Kamat, Assistant Commissioner, Social Welfare
Department, Kolhapur



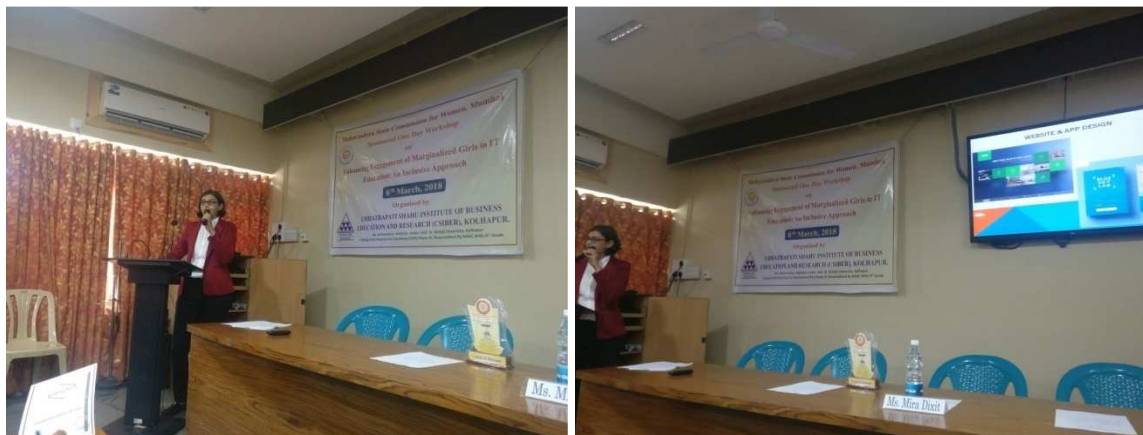
Program Anchoring – Miss Aishwrya,
Student, Dept. of Social Work

Vote of thanks by Dr. R.V. Kulkarni, Head,
Department of Computer Studies, CSIBER





Session III on “Self employment in IT” by Ms. Mira Dixit, Tribe Apps Soft, Kolhapur



Session III Resource Person Felicitation by Dr. Sonia Rajput, Dept. of Social Work, CSIBER and Dr. S.S. Jamsandekar, Dept. of Computer Studies, CSIBER



Session IV on “e-Learning Modules: Employability in IT” by Dr. R.S. Kamath, Associate Professor, Dept. of Computer Studies, CSIBER



Session IV on “e-Learning Modules: Employability in IT” by Dr. R.S. Kamath, Associate Professor, Dept. of Computer Studies, CSIBER



Validictory Session

Chief Guest – Dr. V.M. Hilage, Member, CSIBER Trust



Participants feedback



Address by Chief Guest –Dr. V.M. Hilage, Member, CSIBER Trust



Workshop Overview by Dr. S.S. Apate, Assistant Prof. Dept. of Social Work, CSIBER



Certificate Distribution



Vote of Thanks – Dr. Ajay D. Shinde, Asso. Prof., Dept. of Computer Studies, CSIBER



Workshop Coordinator with Student Volunteers



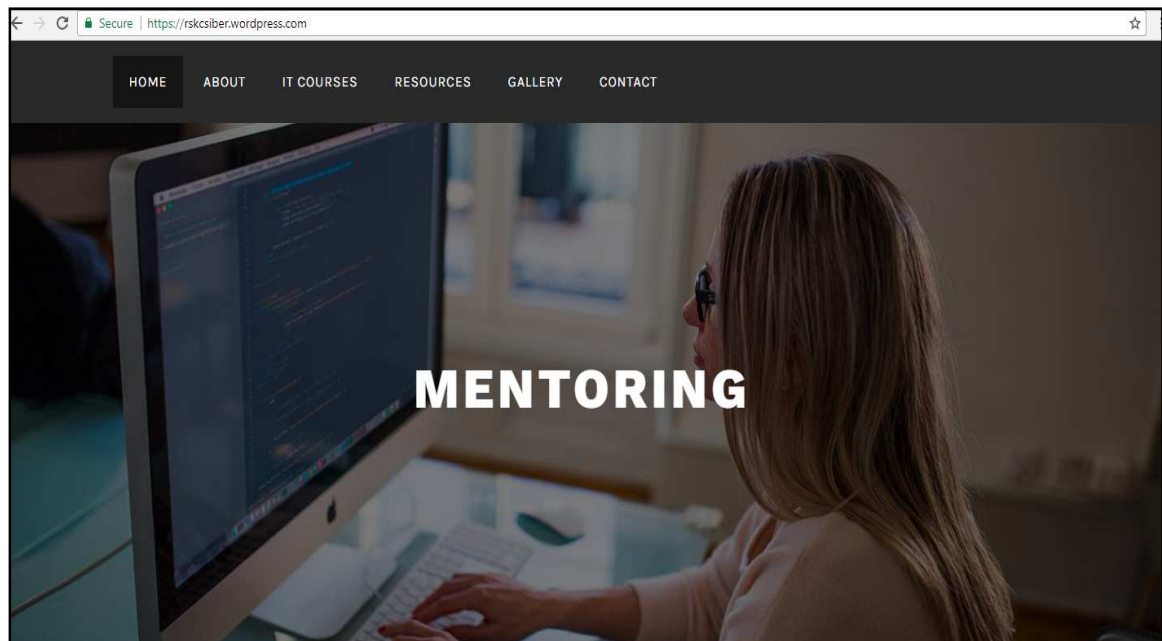
WEBSITE DETAILS

A website <https://rskcsiber.wordpress.com> is designed and developed as a part of the project entitled “Enhancing Engagement of Marginalized Girl Students in IT Education: an Inclusive Approach” funded by “Maharashtra State Commission for Women, Mumbai”. This site is to provide online guidance to students. It is a collection of related pages including multimedia content mainly focused on IT course tutorials, online course details etc. This website is shared with the participants of the training programme for their enhanced learning. A blog is created to discuss technical doubts. Visitors of this site could also submit their queries by submitting online form. Snapshots of selected web pages are provided in this section.

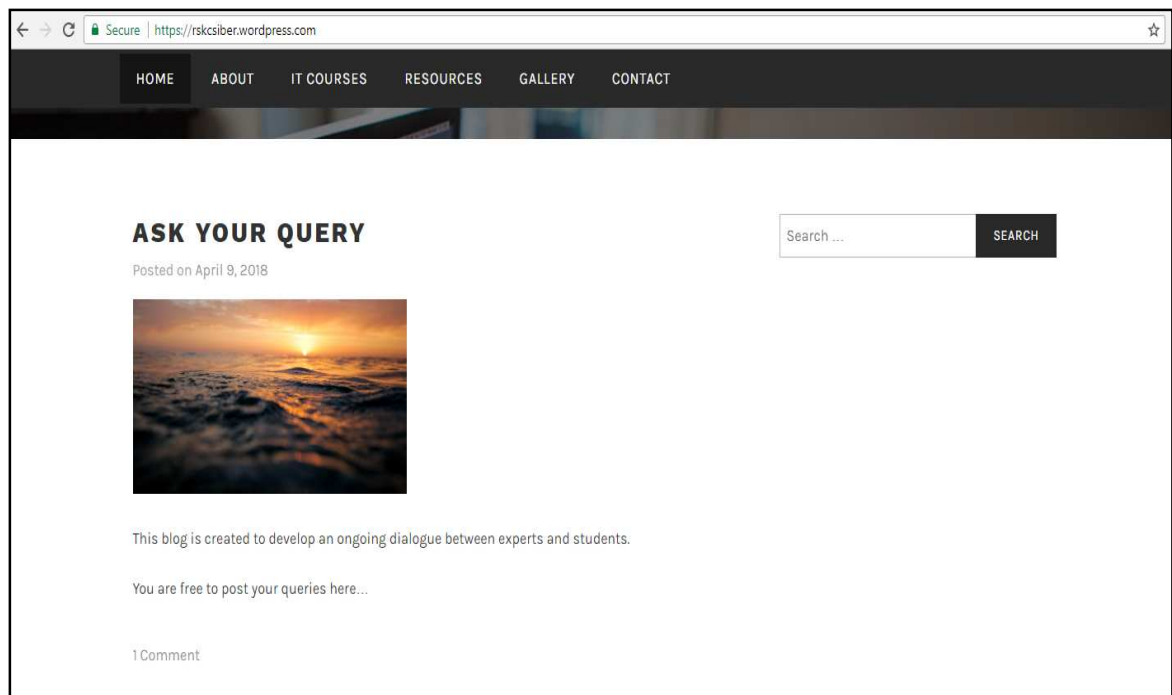
Following are the highlights of the website designed as a part of the project:

- This website is designed and developed in Wordpress, a Content Management System
- The home page is entitled “mentoring”, as online mentorship tool
- Primary Menu with hyperlinks to various webpages placed at top position for easy browsing
- Home page allows visitors to submit their query, which can be replied by site administrator
- About tab gives brief details of project director, the one who launched this site to provide additional resources for enhanced learning
- The webpage entitled “IT Courses” includes hyperlinks for PowerPoint presentations, PDFs, Videos, URLs of selected courses in IT
- The webpage entitled “Resources” links to various Massive Open Online Course (MOOCs)
- Visitor can submit query of feedback by submitting Contact form

Home page of website



Blog to submit query



About tab gives brief details of project director

ABOUT



Dr. Rajani S. Kamath is Associate Professor in the Department of Computer Studies, Chhatrapati Shahu Institute of Business Education and Research, Kolhapur, India. She obtained her Bachelors and Masters in Computer Science from Mangalore University. She received her Ph.D. in Computer Science specialized in Computer Based Visualization from Shivaji University and completed the same in 2011. Dr. Kamath has to her credit 32 research papers published in reputed national and international journals and presented 13 papers in conferences. She has completed two minor research funded by UGC. She has authored three books, in which the book entitled "Educational Data Mining with R and Rattle", published by River Publishers Series in Information Science and Technology, Netherland. Her areas of research interests are Artificial Intelligence, Virtual Reality, Soft Computing and Data Mining. She has immense skill of around thirteen years in teaching and research. Kamath is serving various academic and research administration committees at institute.

[Detailed profile](#)

IT Courses webpage includes hyperlinks for PowerPoint presentations, PDFs, Videos, URLs of selected courses in IT

IT COURSES

[Artificial Intelligence](#)

Introduction and Application

Natural Language Processing

Logic of Propositions and Predicates

Structured_Knowledge Representation

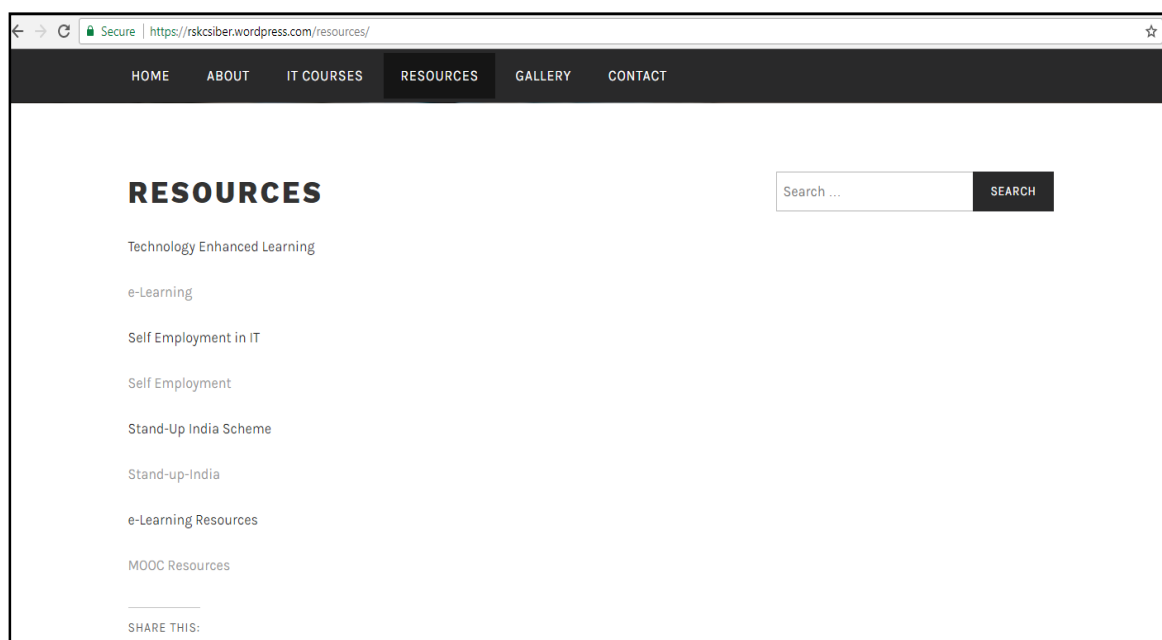
[Expert System - Introduction](#)

https://youtu.be/gUiW_R4lwmU

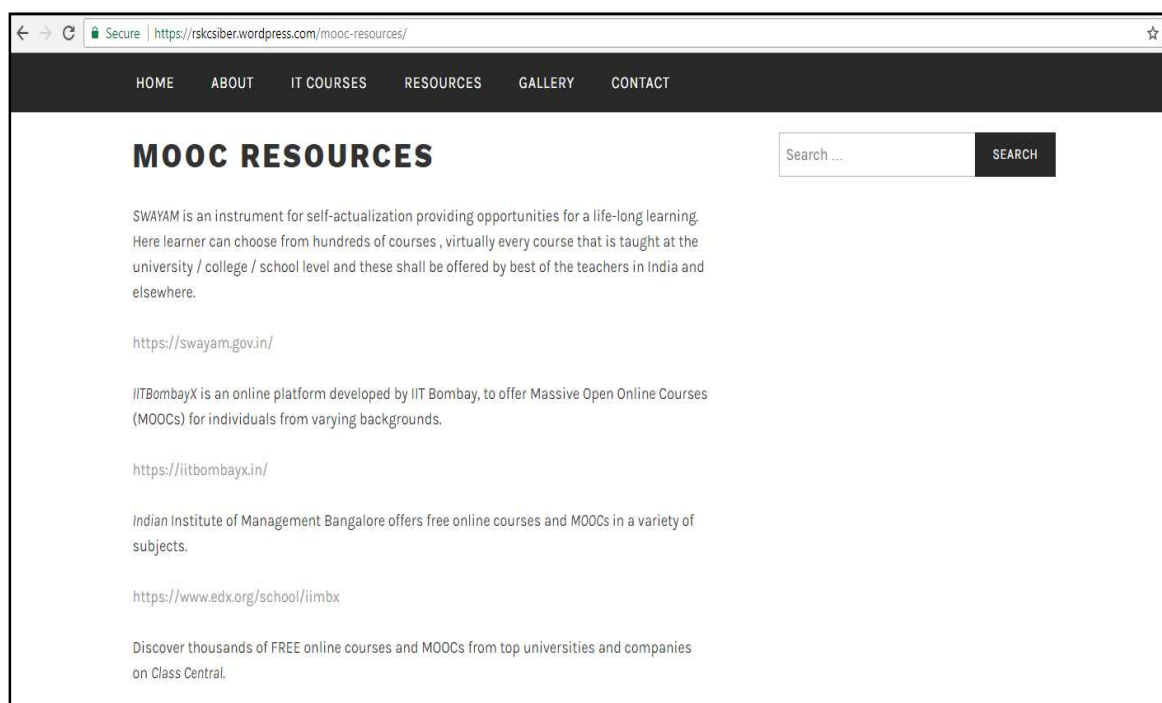
[Computer Networking](#)

TCP IP Model Introduction

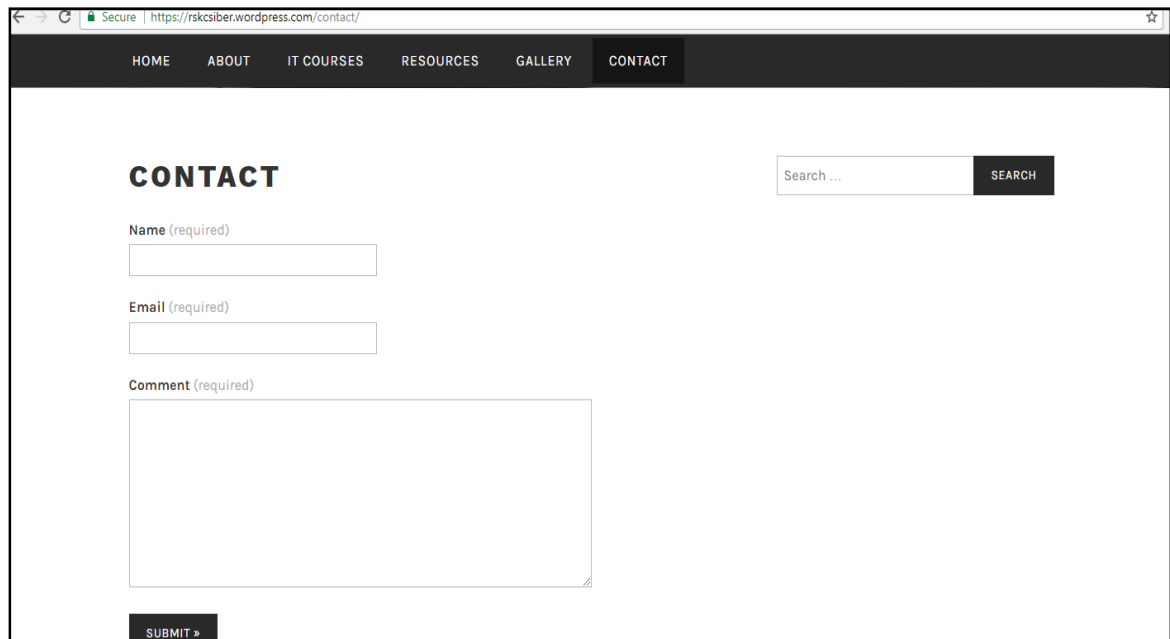
“Resources” webpage links to various additional resources



Details and URLs of various MOOC providers



Provision to submit online query



The screenshot shows a web browser window with the address bar displaying "Secure | https://rskcsiber.wordpress.com/contact/". The website has a dark navigation bar with links: HOME, ABOUT, IT COURSES, RESOURCES, GALLERY, and CONTACT. The main content area is titled "CONTACT" and features a search bar with the placeholder "Search ..." and a "SEARCH" button. Below the search bar, there are three required input fields: "Name (required)", "Email (required)", and "Comment (required)". The "Name" and "Email" fields are single-line text boxes, while the "Comment" field is a larger text area. At the bottom left of the form, there is a "SUBMIT »" button.

CONTACT

Search ... **SEARCH**

Name (required)

Email (required)

Comment (required)

SUBMIT »

Chapter 4

DATA ANALYSIS AND FINDINGS OF THE STUDY

4.1 Introduction

Women constitute half of the population of the world. Education for women is the most ideal approach to enhance the wellbeing, nourishment and monetary status of a family unit that constitute a micro unit of a country economy. The educational, financial, political and social backwardness of women makes them the biggest gathering frustrating the procedure of social change. Women in the technology sector drive development for countries that are booming financially. The interventions under this project are focused on study the current status of marginalized girl students in IT education and to know their awareness regarding career opportunities in IT.

In the phase-I, study of current status of marginalized girls pursuing IT education in the jurisdiction of Shivaji University is conducted using survey method. In phase – II, a one day workshop was conducted to create awareness about Career Opportunities in IT and make them know about various avenues for Self Employment. Geographical area covered for the study is the jurisdiction of Shivaji University Kolhapur which is spread over three districts viz. Kolhapur, Sangli and Satara.

For the present study, primary data has been collected through survey method. The two stage sampling techniques followed for the selection of sample of colleges and respondents from the selected colleges. Simple Random Sampling and Purposive Sampling techniques are used for sampling design. Thus 300 respondents selected from these colleges. The questionnaire tool, the prime instrument of data collection was adopted for the study. A well designed structured questionnaire was used for the data collection.

After the collection of data, data analysis was initiated. i.e. the collected data was organized, tabulated and analyzed. Further the responses were elaborated through charts and graphs. Microsoft Excel and SPSS are used for the present data analysis. This chapter

explores the current status of marginalized girls in IT education, how the different factors affect the education of the marginalized girls and their awareness regarding career opportunities in IT.

4.2 Demographic Analysis

The collected data is entered in to MS-EXCEL which is then exported to SPSS package for further analysis. The success of demystifying the current status of marginalized girls pursuing IT education depends on the extent of choosing the sample from different sub-groups.

Table 4.1: Respondents Age

Age	Frequency	Percentage
Below 18	30	10
19 - 20	187	62.3
21 - 22	73	24.3
Above 22	10	3.3
Total	300	100.0

Question 1, 2 and 3 focused on demographic analysis students. Table 4.1 shows amongst the respondents; more than 50% belongs to the age category 19-20.

Table 4.2: Social Category

Social Category	Frequency	Percentage
NT	46	15.3
OBC	124	41.3
Other	3	1.0
SBC	19	6.3
SC	93	31.0
ST	13	4.3
VJ/DT	2	0.7
Total	300	100.0

As far as social category distribution is concerned, OBC stands highest with 41% of the total sample as shown in the table 4.2. This is followed by SC and then NT.

Majority of the respondents pursuing IT education belongs to social category OBC.

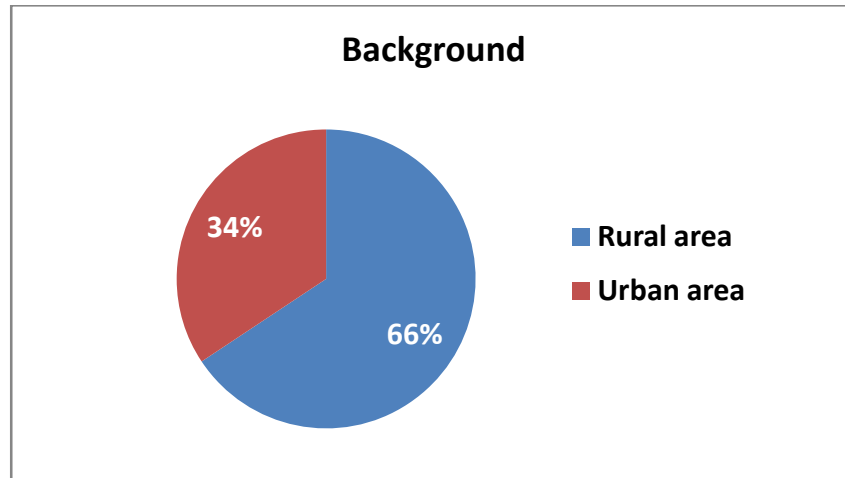


Figure 4.1: Background

Figure 4.1 shows 66% of the respondents for this study are rural background where as 34% from urban area. *Majority of respondents pursuing IT education at graduate level are from rural area.*

4.3 Current Educational Status

This section analyses the respondents' educational details such as discipline, performance, reason for joining the course. Questions 4 to 7 jointly analyze the current educational status of the respondents.

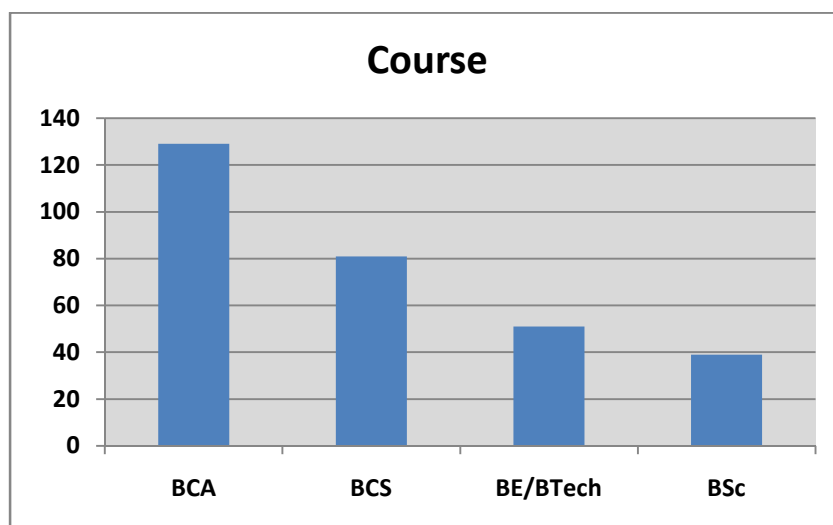


Figure 4.2: Bar Chart indicating students of various courses

The bar graph shown in figure 4.2 depicts that 43% of girls from marginalized community are pursuing Bachelor of Computer Application (BCA) in the jurisdiction of Shivaji University whereas 27% are pursuing BCS.

Majority of the respondents are pursuing BCA.

Table 4.3: Students performance in previous semester examinations

Previous Sem Performance	Frequency	Percent
ATKT	43	14.3
First class	142	47.3
Pass	81	27.0
Second Class	34	11.3
Total	300	100.0

Table 4.3 reveals that amongst respondents, 47.3% of students have secured First Class in previous semester examination. This indicates their interest towards learning. There are students of 14.3% falls under the category ATKT, they need to improve.

Majority of the respondents belongs first class.

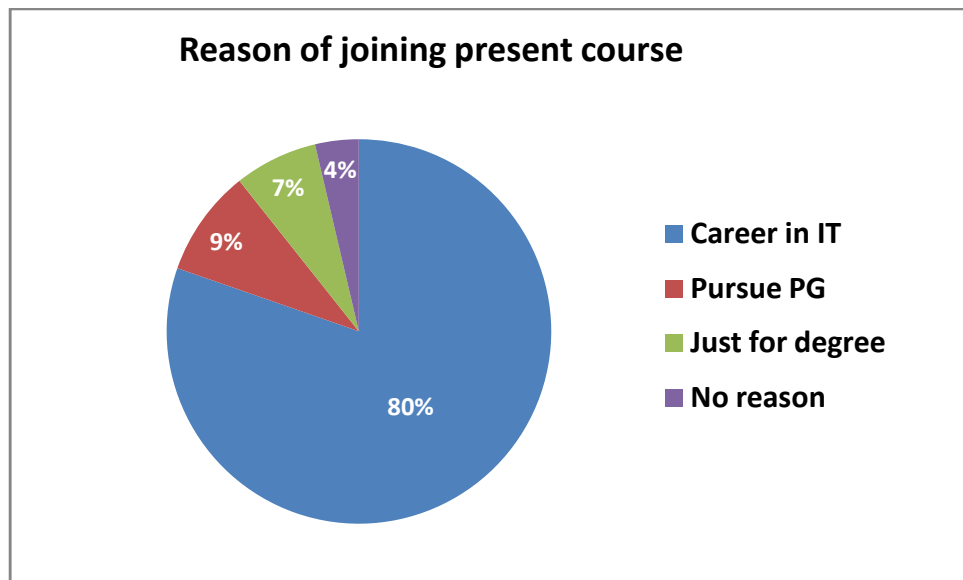


Figure 4.3: Pie Chart indicates reason for joining the current course

Figure 4.3 reveals that majority i.e. 80.3% of girls wants to procure Career in IT, is the reason behind joining the current course, whereas 7% are pursuing current course only for the sake of degree.

This indicates that majority of respondents are interested in IT Career.

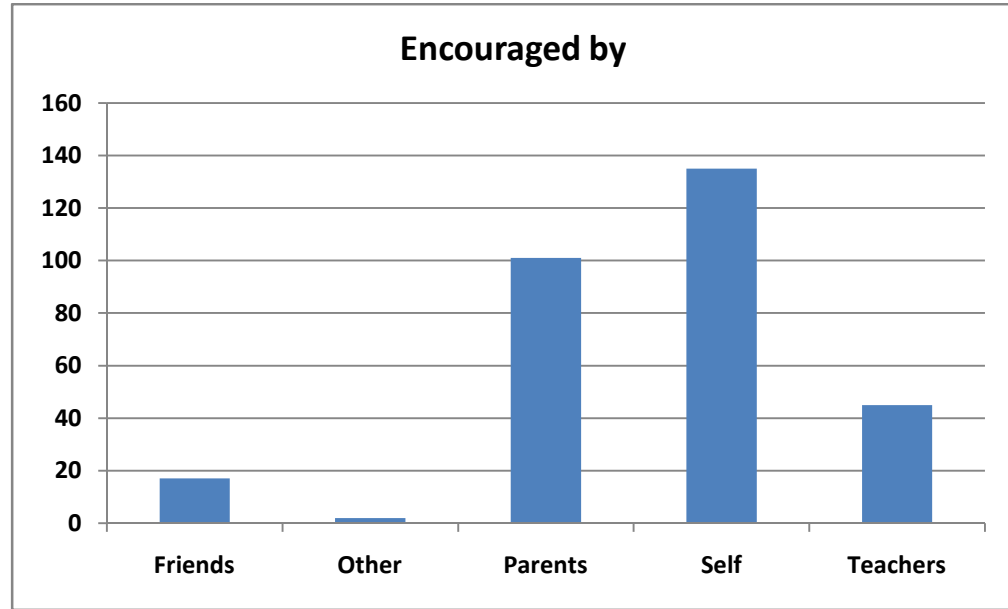


Figure 4.4: Bar Graph indicates students encouraged by whom

Figure 4.4 explains students encouraged by whom for joining the current course. 45% of students are self motivated to join this course. We can correlate this with the earlier analysis shown in figure 4.3, majority are telling Career in IT is the reason behind joining current course. 33% of students are encouraged by their parents. This shows parental interest in girls' education and their career. Only 15% students are encouraged by teachers and 5.7% are encouraged by friends.

This reveals that majority of the respondents are self motivated to join the current course.

4.4 Family Background, Parental Support

This section at the outset tries to know about students' family background, parental support, parent's expectation so on. Question 8 to 15 were analyzed in the light

of family background of girls belongs of marginalized community, pursuing IT education in the jurisdiction of Shivaji University.

Table 4.4: Details of educational expenses borne by

Educational expenses	Frequency	Percent
Loan	6	2.0
Loan and Scholarship	1	0.3
Parents	211	70.3
Parents and Loan	1	0.3
Parents and Scholarship	26	8.7
Parents and Self earning	3	1.0
Parents and Other	1	0.3
Scholarship	42	14.0
Scholarship and Self earning	1	0.3
Self earning	6	2.0
Other	2	0.7
Total	300	100.0

Table 4.4 indicates that 70% of students' educational expenses are borne by their parents. While analyzing the data, it was found that all these courses are self financed, so the students need to bear their fees. 22% of students are bearing fee through scholarship. There are students self earning, 4% are bearing their expenses through their own earning, which is appreciating.

Majority of respondents educational expenses are borne by their parents.

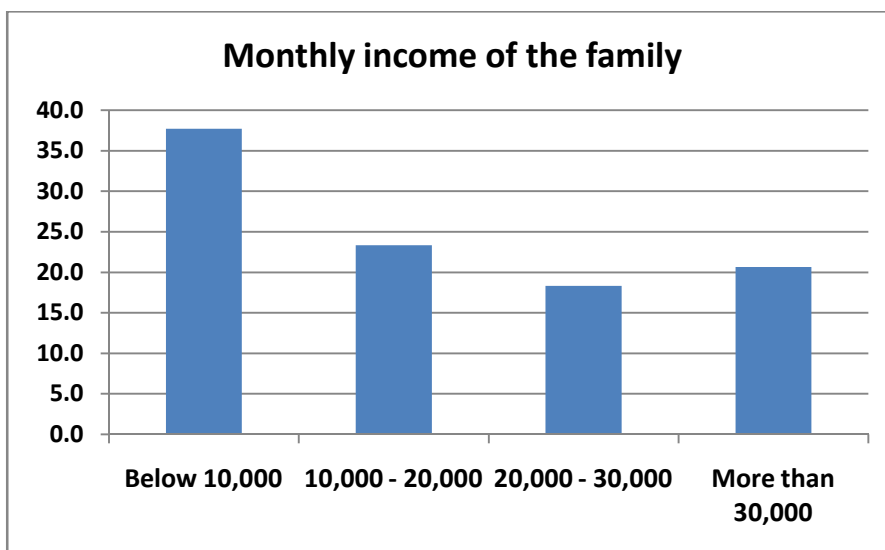


Figure 4.5: Status of total income of the family per month

Figure 4.5 reveals monthly income of the marginalized girls' parents. Majority of them i.e. 37% falls under the category of "Below 10,000". Among them 20% are earning more than 30,000 per month.

Majority of the respondents family income is less than 10,000/-.

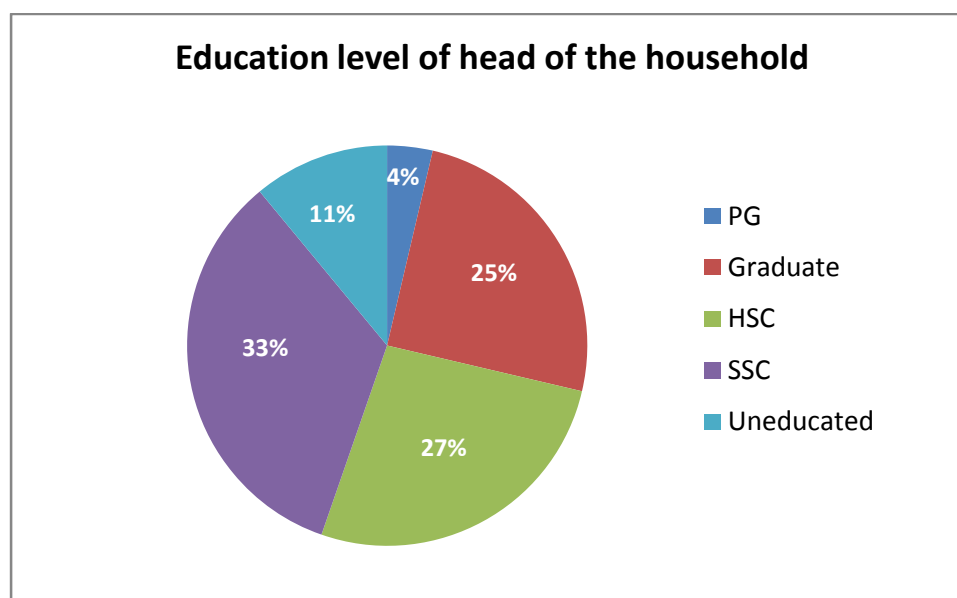


Figure 4.6: Education level of head of the household

Figure 4.6 explains education level of head of the household. 33% among them are having education level only SSC, 25% of them are graduates which is appreciating one. There are 11% of parents who are uneducated. Need to notify here that daughter of uneducated parent is pursuing IT education, implicates parental support though he/she is uneducated.

Majority of respondents' parents' education level is SSC.

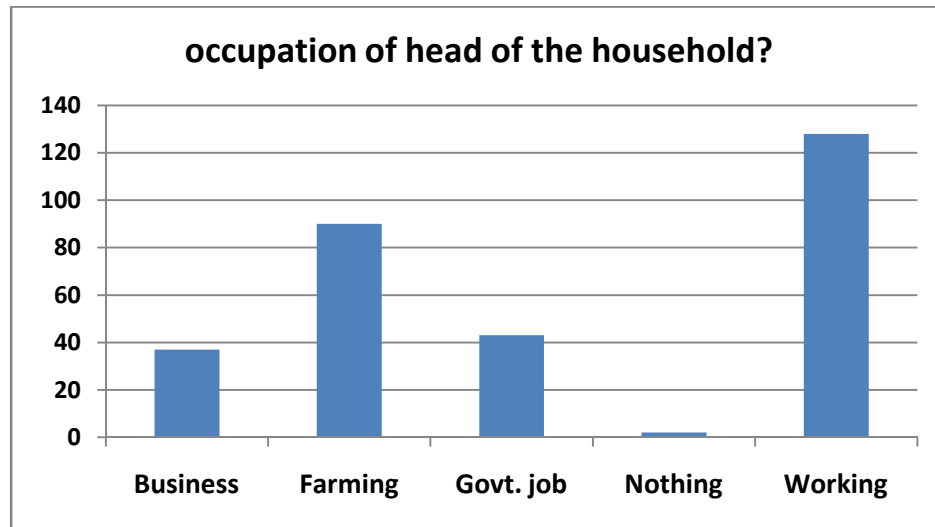


Figure 4.7: Status of education level of head of the household

Figure 4.7 shows occupation of head of the household. 42.7% of parents are working at other places, whereas 30% of them are farmers. 14.3% are employees of Govt. organizations. Few (12.3%) are running their business.

Most of the respondents' parents are working at other places.

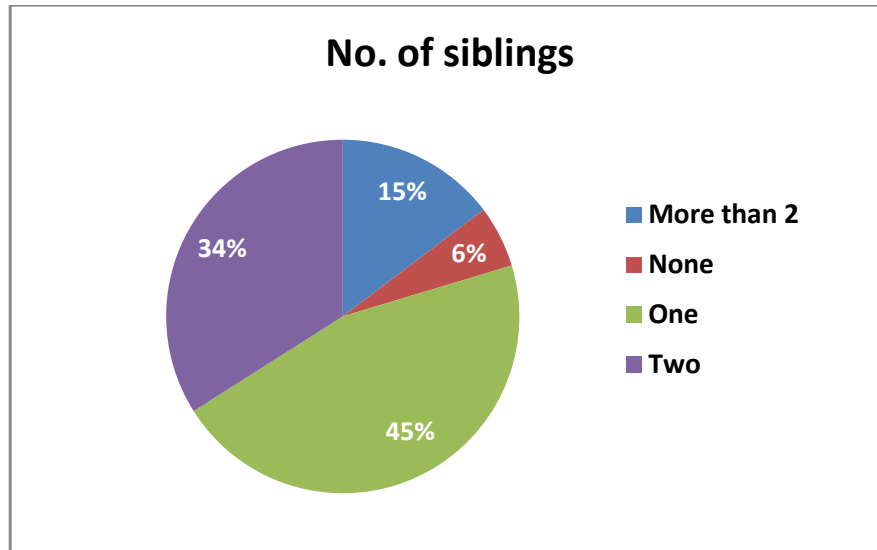


Figure 4.8: No. of siblings

Figure 4.8 shows that 45% of marginalized girls of present study having one brother/sister. 34% of them have two siblings whereas only 6% are single child of their parent. There are 15% who have more than two siblings. The combination of family income, expenses and IT education is challenging one here.

Majority of respondents have single sibling.

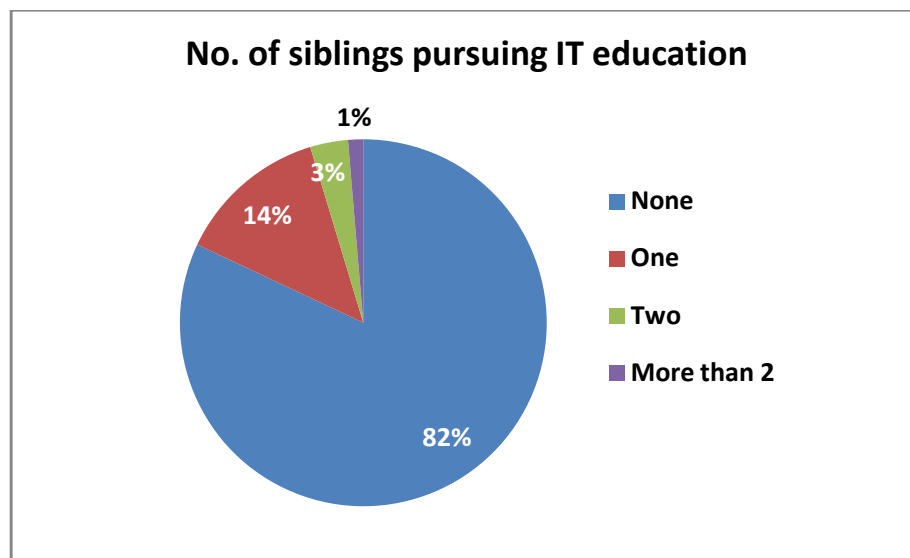


Figure 4.9: No. of siblings pursuing IT education

Figure 4.9 shows details of siblings pursuing IT education. Amongst the respondents: 82% of these girls with no siblings pursuing IT education. 18% are having their siblings in IT education.

Most of the respondents' siblings are not in IT education.

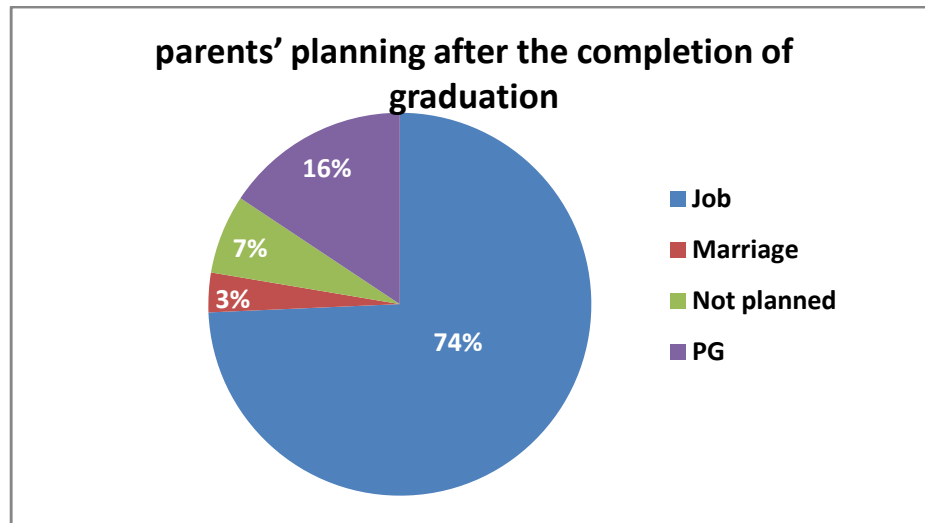


Figure 4.10: Status of parents' planning after the completion of graduation

Figure 4.10 reveals parents expectation about their daughters after the completion of graduation. 74% of them are planning for job where as only 3% are planning for their daughter's marriage. This shows parental interest towards Women Empowerment, most appreciating finding of the present study. 16% of parents are willing their daughters to pursue Post Graduation, a remarkable finding.

Majority of respondents' parents expect daughters to join job after the completion of graduation.

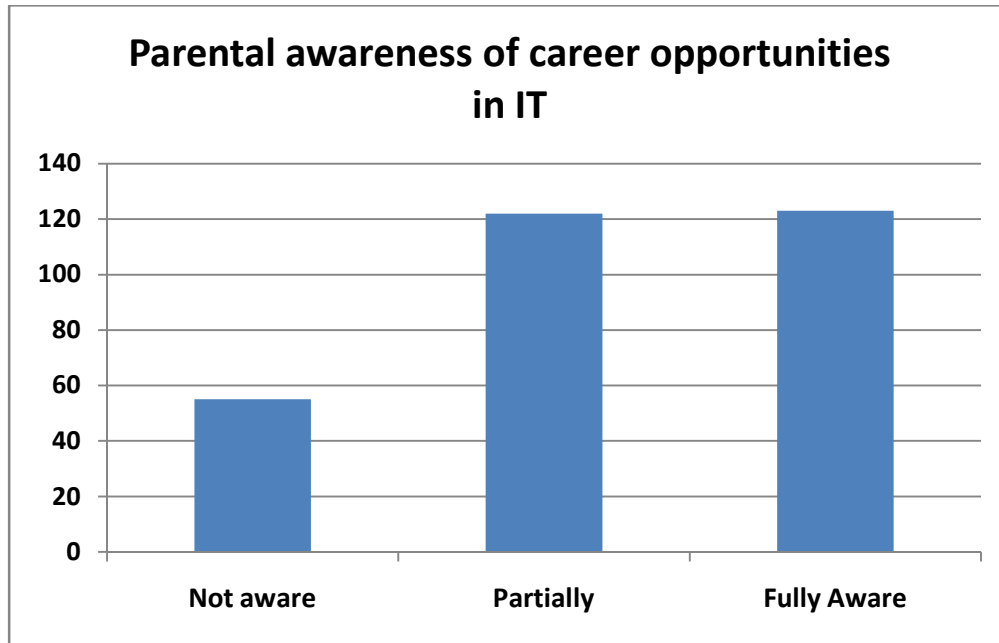


Figure 4.11: Parental awareness of career opportunities in IT

Figure 4.11 indicates parental awareness of career opportunities in IT education. 18.3% of them are telling their parents are not aware of career opportunities in IT; whereas 41% of parents are aware of the same. 40.7% of them are partially aware of opportunities. This shows majority of the parents aware of opportunities in IT education, this helps in getting parental support for girls under present study.

Most of the respondents' parents are partially aware of career opportunities in IT.

4.5 Learning Environment at College

The fifth section seeks students' learning environment at college such as cooperation by administration, teachers, and classmates followed by students' any experience of discrimination at college. Question No. 16 to 20 were analyzed in the light of learning environment experience of marginalized girls of the present study.

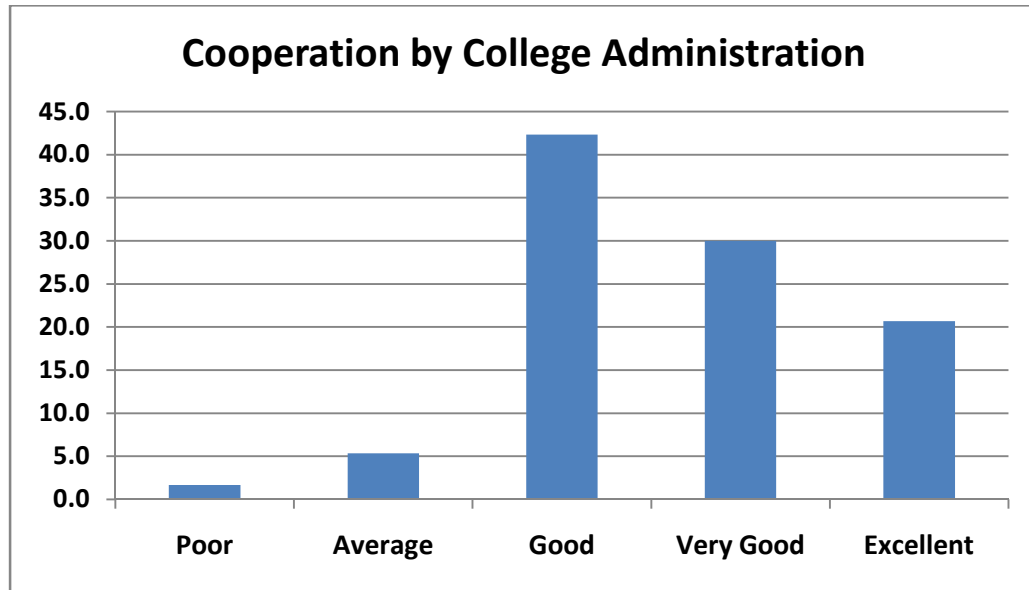


Figure 4.12: Cooperation by college administration for learning

Figure 4.12 explains cooperation by college administration for learning. These values reveal that 42.3% of students appreciate college administration cooperation as “Good”. 20% of them agreed that the cooperation as “Excellent” whereas only 1.7% have opinion that the cooperation is “Poor”. This indicates marginalized girls pursuing IT education in the jurisdiction of Shivaji University are satisfied with cooperation by college administration for their learning.

Most of the respondents are satisfied with cooperation by college administration.

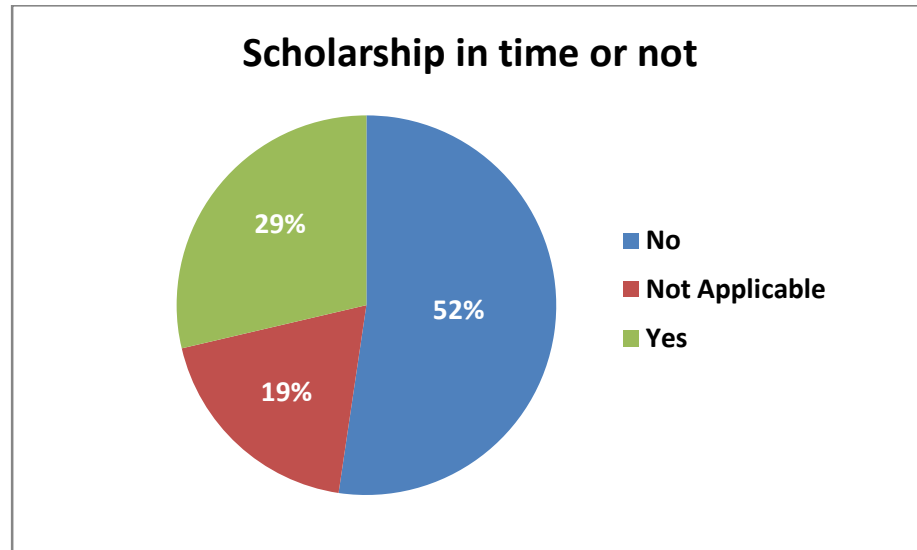


Figure 4.13: Availability of scholarship in time or not

Figure 4.13 explains timely availability of scholarship or not to the students of the present study. While analyzing data, it was found that 52% of the students are not getting scholarship in time. 29% of them were telling that they are getting scholarship in time where 19% were telling “not applicable”.

Most of the respondents are not getting scholarship in time.

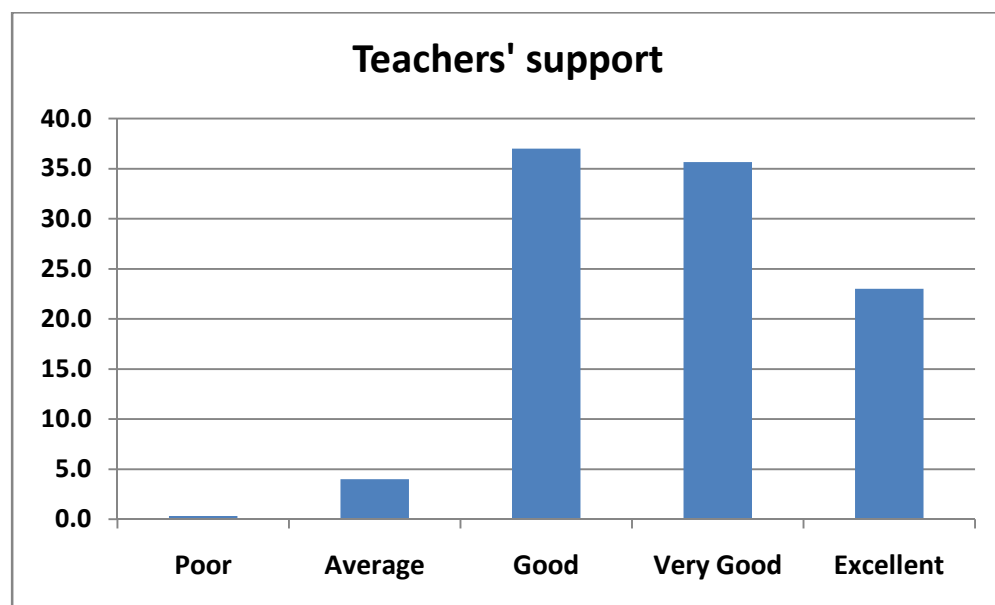


Figure 4.14: Support from teachers in case of difficulties in any subjects

Figure 4.14 indicates support from teachers in case of difficulties in any subjects. While analyzing data, it is observed that 37% of students appreciate teachers support for difficulties in any subject as “Good”, 35% said “Very Good”, 23% of them said “Excellent” whereas only 0.3% of them said “poor”. This indicates marginalized girls pursuing IT education in the jurisdiction of Shivaji University are satisfied with the support by teachers in case of difficulties in any subjects.

Most of the students are satisfied with the support by teachers.

Table 4.5: Details of classmates’ cooperation experienced

Cooperation by Classmates	Frequency	Percent
Poor	5	1.7
Average	6	2.0
Good	75	25.0
Very Good	110	36.7
Excellent	104	34.7
Total	300	100.0

Table 4.5 shows details of classmates’ cooperation experienced by respondents. While analyzing data, it is observed that 36.7% of students appreciate classmates cooperation as “Very Good”, 34.7% said “excellent”, 25% of them said “Good” whereas only 1.7% of them said “poor”. This indicates marginalized girls pursuing IT education in the jurisdiction of Shivaji University are satisfied with the cooperation by their classmates.

Most of the students are happy with the cooperation by their classmates.

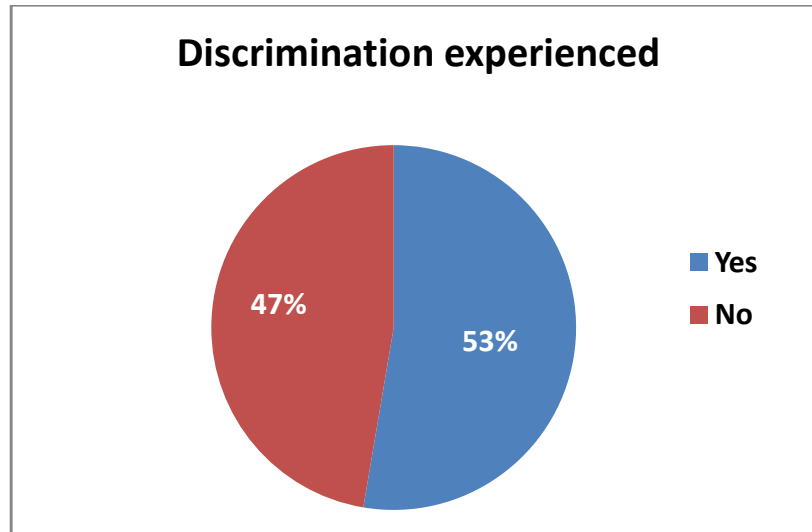


Figure 4.15: Opinion about discrimination experienced or not

There was a question in the questionnaire that “Have you experienced any sort of discrimination in the college?” with the options “Yes” and “No”. The opinions are mutually exclusive. As per the graph shown in figure 4.14, 53% are agreed that they have experienced discrimination whereas 47% of said disagreed the same.

Majority of the respondents are experiencing discrimination at their college.

4.6 Learning Capability

The sixth section comprises questions deal with students’ learning capability. Question No. 21 to 25 were analyzed in the light of ability to develop Apps, learning new technologies etc.

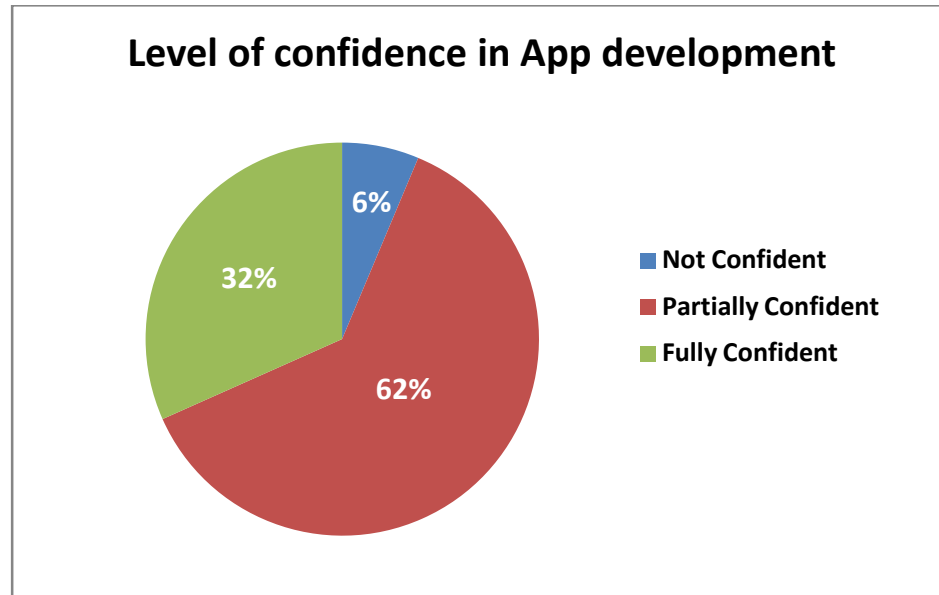


Figure 4.16: Chart indicates level of confidence in Software/App development

Figure 4.16 shows the level of confidence of the respondents of present study in Software/App development. 62% are partially confident in application development. 32% are fully confident whereas only 6% not confident in software development. This gives positive implication towards their career in IT sector.

Majority of the respondents are partially confident in Software/App development.

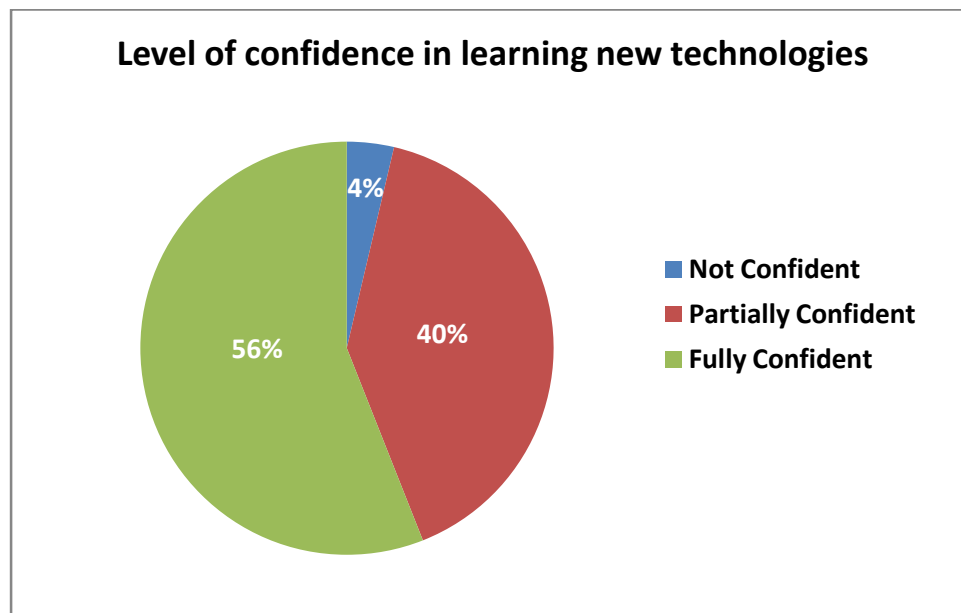


Figure 4.17: Level of confidence in learning latest technologies

Figure 4.17 shows the level of confidence of the respondents of present study in learning latest technologies for better career. 56% are fully confident in learning latest technologies. 40% are partially confident whereas only 4% not confident in learning latest technologies. This reveals positive strategy of these students towards IT education and career.

Most of the respondents are showing confidence in learning new technologies.

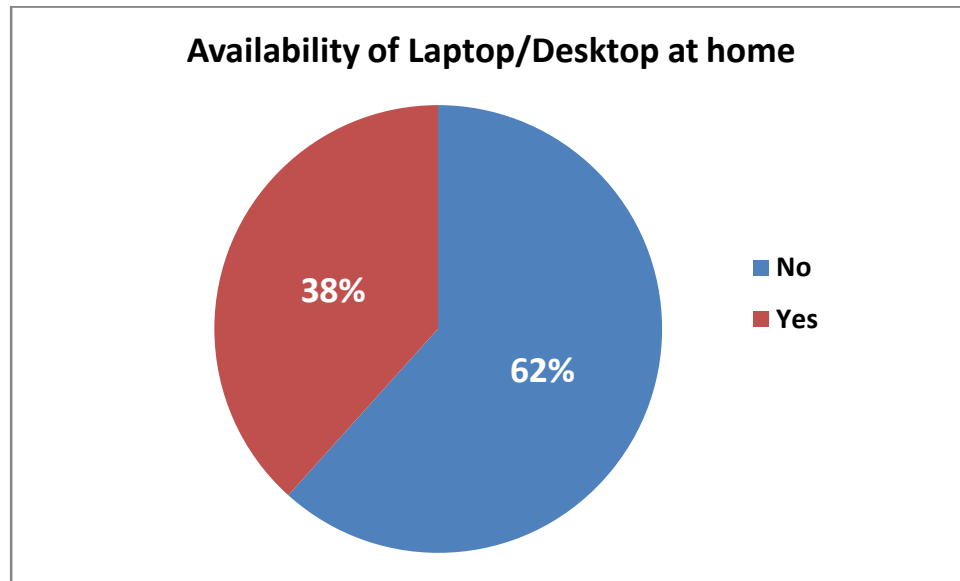


Figure 4.18: Availability of Laptop/Desktop at home

Figure 4.18 reveals availability of Laptop/Desktop at home for practice of marginalized girls under the present study. Amongst them, 62% are not having facility at home for practice whereas 38% of them have laptop/desktop at home for practice.

Most of the respondents don't have desktop/laptop at home for their practice.

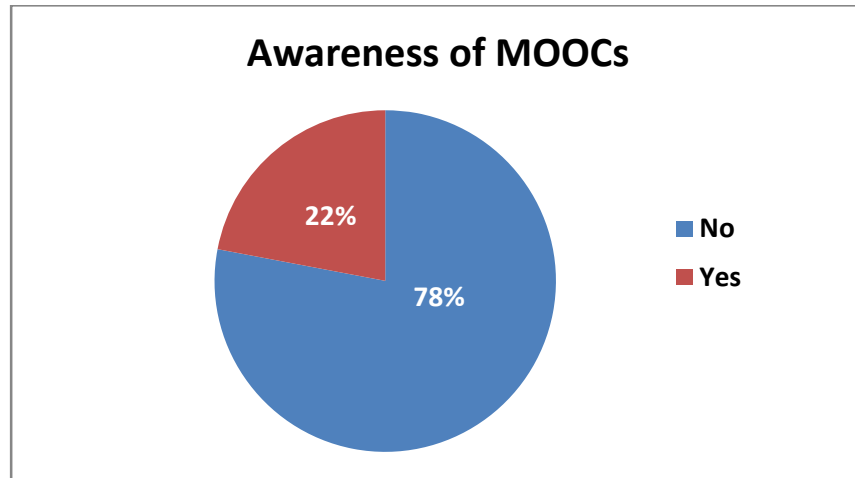


Figure 4.19: Awareness regarding Massive Open Online Courses

Figure 4.19 shows the students' awareness regarding Massive Open Online Courses (MOOCs). Amongst them, 78% are not aware of MOOCs, whereas only 22% of them are aware of MOOCs. Asking this question in the questionnaire made students to explore MOOCs.

Majority of the respondents are not aware of Massive Open Online Courses.

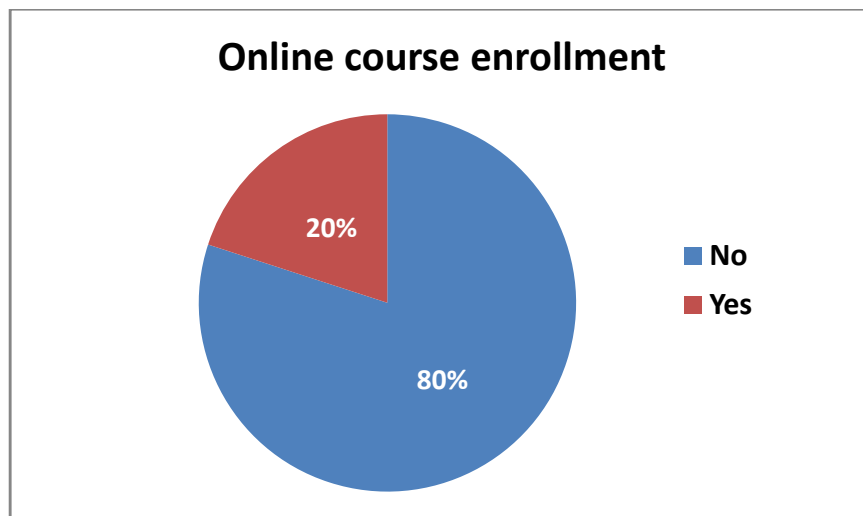


Figure 4.20: Online course enrollment status

The status of enrollment to online courses is shown in figure 4.20. Only 20% of them have enrolled for online courses whereas 80% are not. This is correlated with the

figure 4.19 in which only 22% are aware of online courses. This question encouraged students for enrolment to online courses for additional learning.

Most of the students have not enrolled for online courses.

4.7 Awareness Regarding Career Opportunities in IT

Section seven seeks the awareness of the students' regarding career opportunities in IT and their future goals so on. Question No. 27 to 34 were analyzed in the light of Career Awareness which is one of the objectives of the present study.

Table 4.6: Details of students' future goals

Future Goal	Frequency	Percent
Job	190	63.3
Marriage	59	19.7
Not planned	4	1.3
PG	47	15.7
Total	300	100.0

Table 4.6 gives details of students planning after the completion of graduation. The highest i.e. 63.3% of them are interested in pursuing job whereas 15.7 are interested in pursuing Post Graduation. 19.7% have decided to settle in life as marriage. This shows majority of them have positive strategy towards self earning and career.

Most of the students willing to go for job after the completion of their graduation.

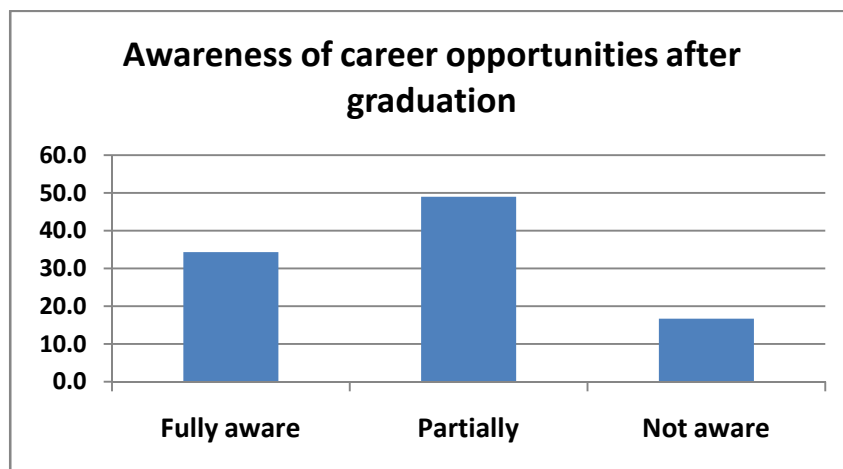


Figure 4.21: Awareness of career opportunities after graduation

The Awareness of students under present study regarding career opportunities after graduation is shown in figure 4.21. Among them 34.3% are fully aware of career opportunities after graduation whereas 16.7% are not aware and remaining students are partially aware of career opportunities after graduation.

Most of the students are partially aware of career opportunities after graduation.

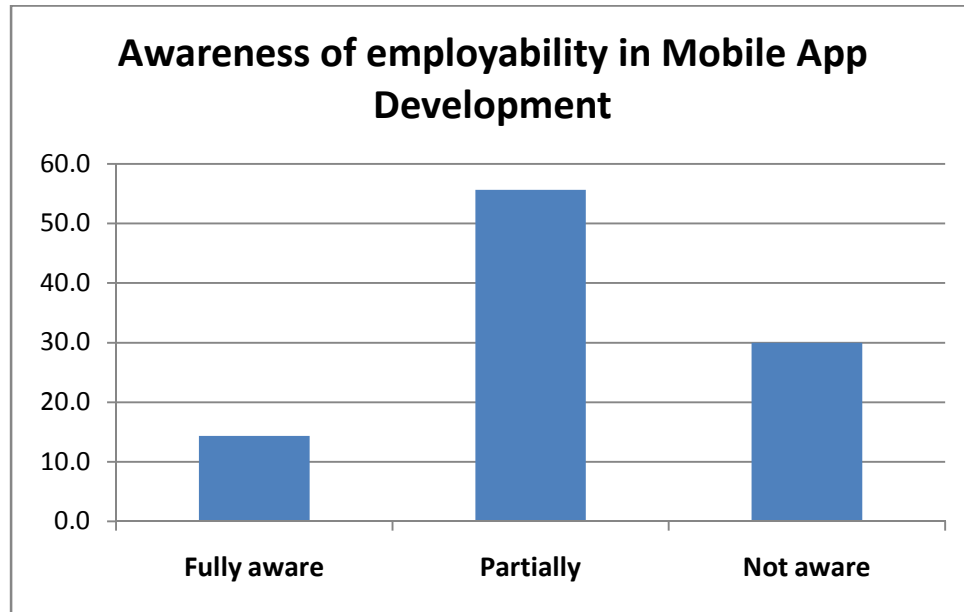


Figure 4.22: Awareness of employability in Mobile App Development

Responses collected to know students' awareness about employability in Mobile App Development. Figure 4.22 indicates that only 14.3% of students are fully aware about employability in Mobile App Development whereas 30% of them are not aware and remaining are partially aware of employability in Mobile App Development.

Majority of respondents are partially aware of employability in Mobile development.

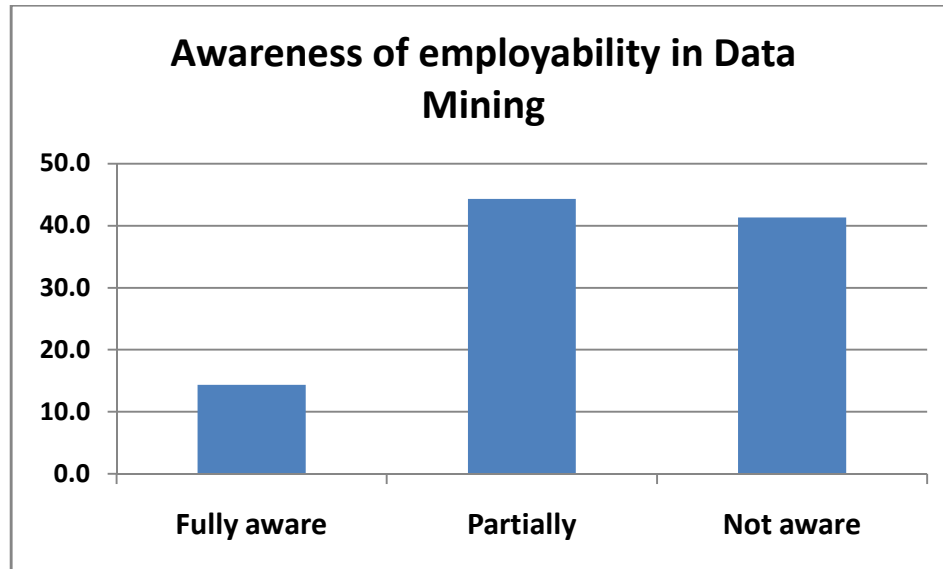


Figure 4.23: Awareness of employability in Data

Responses collected to know students' awareness about employability in Data Mining. Figure 4.23 indicates that only 14.3% of students are fully aware about employability in Data Mining whereas 41.3% of them are not aware and remaining are partially aware of employability in Data Mining.

Most of the respondents are partially aware of employability in Data Mining.

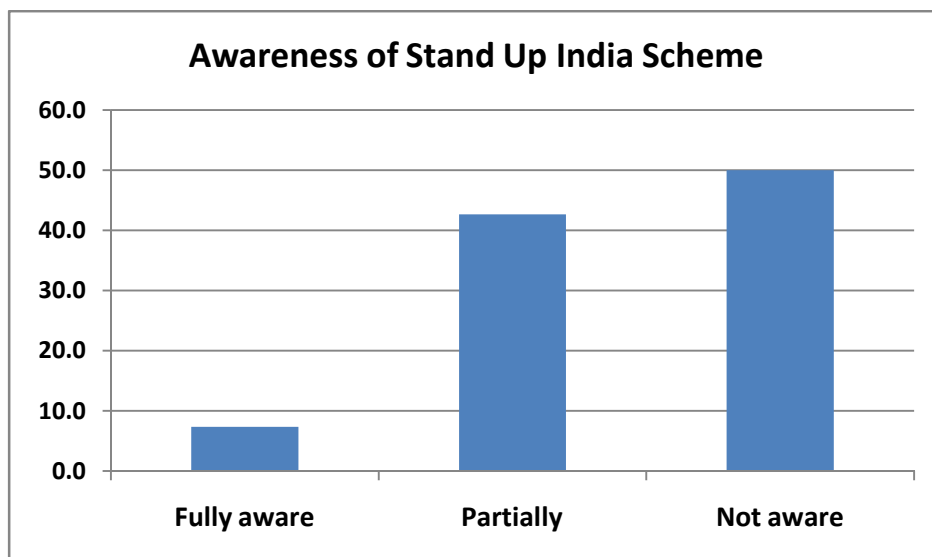


Figure 4.24: Awareness of Stand Up India Scheme

Responses collected to know students' awareness about Stand Up India Scheme launched by Govt. of India. While analyzing the responses, it is revealed that only 7.3% of students are fully aware of Stand Up India Scheme whereas 50% of them are not aware and remaining 42.7% are partially aware of the scheme. Figure 4.24 shows this analysis.

Most of the respondents are not aware of Stand Up India Scheme.

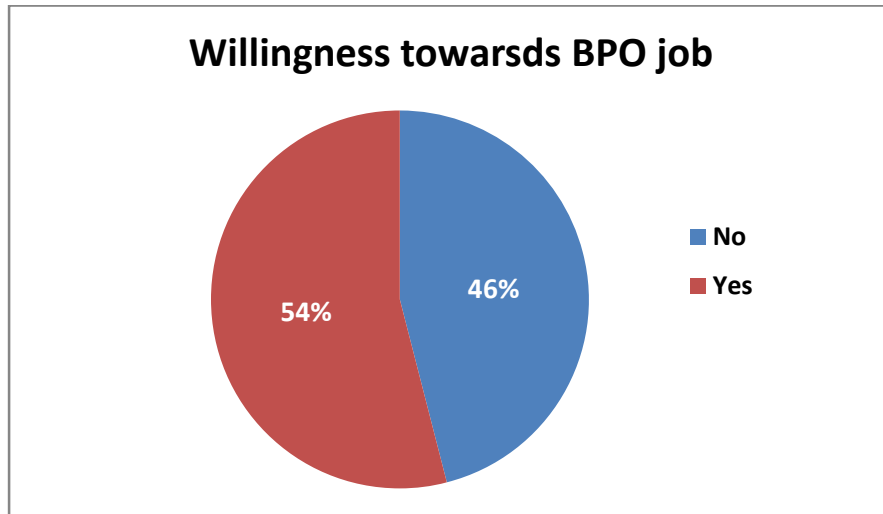


Figure 4.25: Students' willingness towards job at Call Centre (BPO)

There was a question to know students' willingness towards job at Call Centre (BPO). Amongst them, more than 50% are ready to join Call Center whereas 46% are not showing interest in joining Call Center as shown in figure 4.25. This indicates the first group is very much interested in earning but the second group might have proper plan about their career.

Majority of the students are not showing willingness towards BPO job even though they get.

Table 4.7: Type of the job students' willing to

Type of the job	Frequency	Percent
Govt. job	132	44.0
IT company job	150	50.0
Self employment	11	3.7
Teaching	7	2.3
Total	300	100.0

There was a question in the questionnaire that “In which sector you want to pursue your career?” Responses are analyzed and shown in Table 4.7. Among them 50% are interested in job in “IT sector”, 44% prefer to join “Government sector”. Only 2.3% are interested in “Teaching” and 3.7% are interested in “Self Employment”.

Most of respondents willing to pursue career as “Developer” in IT sector.

Table 4.8: Type of the career in IT sector

Career at IT	Frequency	Percent
Data Analyst	39	13.0
Developer	129	43.0
Maintenance	17	5.7
Network	63	21.0
Other	52	17.3
Total	300	100.0

Responses collected to know the type of the career in IT sector, the respondents willing to pursue. 43% of respondents are willing to become Developer whereas 21% are interested in Network administration.

Majority of the respondents are interested in network administration as their career.

There were few open ended questions in the questionnaire such as:

1. Who is your (woman) role model in your life?
2. Do you want to share anything which is missed in this questionnaire

For the question regarding role model (woman) in life, the responses received such as:

- Mother
- My Teacher
- Jijamata
- Kalpana Chawala
- Kiran Bedi
- Mother Theresa
- Sudha Murti

- Rani Laxmi Bai
- Megha Patkar

Majority of the respondents treat their mother as role model in their life.

Only very few answers are received for the last question i.e. “Do you want to share anything which is missed in this questionnaire”. The answers received are:

- “I think government should have to give more opportunities in it sector in Kolhapur also”
- “It is a nice questionnaire, explored career opportunities”

4.8 Conclusion

This chapter has explored analysis and findings based on data collected. The questionnaire designed for this study comprised of 36 questions based on Personal information, Family details, Parental support and awareness regarding IT education, Learning environment at educational organizations, Awareness of cutting edge technologies and career opportunities. The responses were collected from 300 girls belongs to marginalized community pursuing IT education in the jurisdiction of Shivaji University. After the collection of data, it was organized, tabulated and analyzed. Further the responses were elaborated through graphical representations using Pie chart and Bar graph. Thus the prime objective i.e. “undertaking the study of marginalized girls in IT education” is fulfilled. The summary, findings and recommendations are discussed in the Chapter 5.

Chapter 5

SUMMARY, RECOMMENDATIONS AND CONCLUSION

5.1 Introduction

Education has been considered as a basic contribution for monetary and social advancement. It enables disadvantaged groups with expanded productivity and capacity to ensure their advantage, raise voice against mistreatment and make them politically cognizant. Proficiency is the initial step of empowerment of an individual; it opens the way to secure information. It is the pre-imperative factor, which enhances human capacities, upgrade expanded support of individuals underway and accordingly, set up synergic connection between human improvement and social advancement. In recent days "inclusion" is the advance mantra for policy makers of our nation. In this setting of inclusive growth, "Education" is the best tool that can open up opportunity, empower marginalized section, ignite social change and catalyze financial development.

In light of this, the present report portrays the research project entitled “Enhancing Engagement of Marginalized Girl Students in IT Education: An Inclusive Approach” funded by “Maharashtra State Commission for Women, Mumbai”. The present study sought to know the current status of marginalized girls in IT education. Geographical area covered for this study is the jurisdiction of Shivaji University.

5.2 Revisiting the Research Problem

To address critical needs for functional literacy and women empowerment; this project aimed at undertaking the study of marginalized girls pursuing IT education in the jurisdiction of Shivaji University. The intent of this project is to enhance engagement of marginalized girls in IT education with inclusive approach. Following are the objectives of the investigations taken up in this research:

- Study the current status of marginalized girl students in IT education
- Study how the different factors affect the education of the marginalized girls
- Know awareness of marginalized girls regarding career opportunities in IT
- Make marginalized girls proficient with the different avenues for self employment

- Engage marginalized girls and women in developing positive strategies towards IT education, financial stability;
- Develop an ongoing dialogue between the educational institutes and marginalized girls to provide mentorship to improve understanding and engagement.

All the above mentioned objectives are encouraged took up in this research pertaining to the girl students belongs to marginalized community pursuing IT education at undergraduate level in the jurisdiction of Shivaji University.

5.3 Methodology Adopted

This project seeks to engage more number of marginalized girls in IT education. The marginalized girls pursuing IT education from Shivaji University Kolhapur are the target group studied for the present research. In phase-I, study of current status of marginalized girls pursuing IT education in the jurisdiction of Shivaji University is conducted using survey method. The primary data collected through survey method. The two stage sampling techniques followed for the selection of sample of colleges and respondents from the selected colleges. Simple Random Sampling and Purposive Sampling techniques are used for sampling design. Thus 300 respondents selected from these colleges. The questionnaire tool, the prime instrument of data collection was adopted for the study. A well designed structured questionnaire was used for the data collection. The survey team members personally visited the respective sample colleges and distributed the questionnaires among the participants. In phase – II, a one day workshop is conducted to create awareness about Career Opportunities in IT and make them know about various avenues for Self Employment.

5.4 Findings

The prime objective of this research i.e. “undertaking the study of marginalized girls in IT education” is accomplished by following appropriate research methodology, data collection and analysis of the data. Survey method with Questionnaire as Data Collection tool is used in the present investigation. Chapter 4 has explored analysis and findings of the responses collected during field investigation.

This section however will enlist the findings of the present study. Following are the general findings about marginalized girl students pursuing undergraduate IT education in the jurisdiction of Shivaji University, are surfaced out of the present investigation:

- i. Most of the girls from marginalized community pursuing IT education belongs to OBC category
- ii. Most of the respondents belongs to age category 19-20
- iii. Majority of them are from rural background. This implies progress at families of rural area towards education in IT for their girls
- iv. Majority of the respondents of the present study are pursuing Bachelor of Computer Application in the jurisdiction of Shivaji University
- v. Amongst respondents, 47.3% of students have secured First Class in previous semester examination. This indicated their interest towards learning.
- vi. Majority girls are willing to procure Career in IT, is the reason behind joining the current course, whereas 7% are pursuing current course only for the sake of degree. This indicates that majority are interested in IT Career.
- vii. Most (45%) of the respondents are self motivated to join the current course. 33% of students are encouraged by their parents. This shows parental interest in girls' education and their career.
- viii. While analyzing the data, it was found that most of the students' educational expenses are borne by their parents. There are few girls who earn and learn, need to be highlighted.
- ix. The total monthly income of the majority of these girls' families falls under the category "Below Rs.10,000-".
- x. Majority of respondents' parents' education level is SSC. Only 25% of the head of household are Graduates
- xi. Regarding occupation of head of the household, most of the respondents' parents are working at other places, whereas only 30% are farmers.
- xii. Most of the respondents sibling's are not pursuing education in IT

- xiii. The study revealed that majority of these girls' parents planning for job after graduation. This shows parental interest towards Women Empowerment, a most appreciating finding of the present study.
- xiv. The study shows that majority of the parents aware of opportunities in IT education, this helps in getting parental support for girls under present study.
- xv. Most of the marginalized girls pursuing IT education in the jurisdiction of Shivaji University are satisfied with cooperation by college administration for their learning.
- xvi. While analyzing the data, it was found that majority of the students are not getting scholarship in time.
- xvii. Majority of them are satisfied with the support by teachers in case of difficulties in any subjects.
- xviii. Most of the respondents gave positive reply for cooperation by classmates. 36.7% and 34.7% of them have opinion "Very Good" and "Excellent" about their classmates' cooperation respectively.
- xix. Merely half of the respondents agreed that they have experienced discrimination
- xx. Regarding level of confidence of the respondents in Software/App development, most of them are partially confident in application development. This gives positive implication towards their career in IT sector.
- xxi. Almost all of them are confident in learning latest technologies for better career. This reveals positive strategy of these students towards IT education and career.
- xxii. Majority of the respondents don't have facility such as Desktop/Laptop at home for practice
- xxiii. Among them, majority are not aware of Massive Open Online Courses. This question in the questionnaire made students to explore MOOCs.
- xxiv. Very few students are enrolled for online course, it is obvious because most of them are not aware of online courses
- xxv. Regarding future goals of these girls, most of them planning for job. Very few are interested in marriage immediately after graduation. This shows majority of them have positive strategy towards self earning and career.

- xxvi. Majority of these students are not completely aware of career opportunities after graduation, employability in Mobile App Development and employability in Data Mining
- xxvii. Govt. of India has launched Stand Up India Scheme in the year 2016. These students are not aware of this scheme in detail
- xxviii. Regarding job at Call Centre, received opinion equally. Nearly half of them are ready to join BPO, indicates they are very much interested in earning. Other half might have proper plan about their career, so not ready to join BPO though they get
- xxix. Among them 50% are interested in job in “IT sector”, 44% prefer to join “Government sector”. Only 2.3% are interested in “Teaching” and 3.7% are interested in “Self Employment”. It is required create interest in Self Employment.
- xxx. Majority of the respondent willing to join as “Developer/ Programmer” in IT sector

5.5 Summary

Geographical area covered for the study is the jurisdiction of Shivaji University Kolhapur. This study is delimited to the marginalized girl students pursuing B.C.A. or B.C.S. or B.Sc. or B.E. or B.Tech. in Computer Science. Two stage simple random techniques were used. In the first stage colleges from each of these three districts are selected by random sampling. In the second stage marginalized girls pursuing IT education in these colleges are randomly selected for the investigation. This study was conducted in the month of February 2018. The well structured questionnaire is designed as per the objectives of the present study. The nature of the study was descriptive and quantitative research designed was used.

The prime objective of this research i.e. “undertaking the study of marginalized girls in IT education” is accomplished by following appropriate research methodology, data collection and analysis of the data. Survey method with Questionnaire as Data Collection tool is used in the present investigation. After the collection of data, it was

organized, tabulated and analyzed. Further the responses were elaborated through graphical representations using Pie chart and Bar graph. Findings, Summary, Recommendations and Scope for future research are discussed in this chapter.

5.6 Recommendations

In light of these findings and in order to better prepare for the steps, recommendations further developed in the report are highlighted as necessary for the improvement of the society as well as nation. Following are the recommendations to Central Government/State Government/ Local Self Government/Any other agencies surfaced out of the present investigation:

1. The concerned Government body or educational organizations should take care of organizing programmes to create awareness about Self Employment, Stand Up India Scheme among these marginalized girls of the present study
2. College authority should take some measures to handle discriminations what these girls are experiencing
3. Government should make some provision for providing Desktop/Laptop for these girls at home for practice
4. Educational institutes or other agencies need to create awareness about Online Courses which aids in better career
5. Additional or remedial coaching is expected to improve these students performances in their regular studies
6. Central, State, Local government must take some measures to motivate these girls for higher education in IT, career in IT as additional steps towards Women Empowerment
7. Parental awareness about education and career in IT is essential. College authorities should plan some programmes such as Parents' Meet for the same.
8. There are students not getting scholarship in time. Government should take care about it

5.7 Conclusion

To address critical needs for functional literacy and women empowerment; this project aimed at studying the current status of marginalized girl students in IT education, developing positive strategies towards IT education, leadership approach, entrepreneurship among marginalized girls. This report sheds light on the current status of marginalized girls such as their family details, parental support and awareness regarding IT education, learning environment at educational organizations, awareness of cutting edge technologies and career opportunities. This survey focused on marginalized girls pursuing B.C.A./B.C.S/B.Sc. Computer Science/ B.E. Computer Science/B.Tech. Computer Science from Shivaji University jurisdiction.

5.8 Future Research Directions

Present report portrayed the research project entitled “Enhancing Engagement of Marginalized Girl Students in IT Education: An Inclusive Approach” This project aimed at undertaking study of marginalized girls pursuing IT education in the jurisdiction of Shivaji University.

The research work can be further extended on the following lines:

- There is a scope for extending by considering the entire Maharashtra as geographical area for the study.
- There is a scope for extending by considering marginalized girls pursuing IT education at different levels such as School, Post Graduate Institutes, Research Studies, Private Institutes etc
- This study can also be extended by considering women belonging to marginalized community working at IT sector

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Annexure - I

List of colleges where field investigation is carried out for the present study:

Sr. No.	Name of the College
1	Shivraj College, Gadhinglaj
2	Dr. J. J. Magdum College of Engineering, Jaysingpur
3	Gopal Krishna Gokhale College, Kolhapur.
4	Karmaveer Hire Arts, Science, Commerce and Shikshanshastra Mahavidyalaya, Gargoti
5	Sadashivrao Mandlik Mahavidyalaya, Murgud.
6	Doodhasakhar Mahavidyalaya, Bidri
7	Sanjay Ghodawat Institution, Atigre
8	Shri Shahaji Chh. Mahavidyalaya Kolhapur
9	New College, Kolhapur
10	Ashokrao Mane Group of Institutions, Wathar
11	Miraj Mahavidyalaya, Miraj
12	Deshbhakta Anandrao Balwantrao Naik Arts and Science College, Chikhali, Tal.Shirala
13	Ganapatrao Aarwade College of Commerce, Sangli.
14	Arts and Commerce College, Kasegaon, Tal.Walwa
15	Arts and Commerce College, Ashta, Sangli
16	Smt. Kusumtai Rajarambapu Patil Kanya Mahavidyalaya Islampur
17	Willingdon Mahavidyalaya, Sangli
18	Kasturbai Walchand College, Sangli
19	Y.C.Institute of Science, Satara.
20	Rajendra Mahavidyalaya, Khandala,
21	Balasaheb Desai College, Patan
22	S. M. Shankarao Mohit Patil Mahavidyalay, Rahimatpur
23	DP Bhosale College, Satara
24	Shripatrao Kadam Mahavidyalaya, Shirwal
25	Savitribai Phule Mahila Mahavidyalaya, Satara.

Annexure - II

Questionnaire - A survey on Marginalized Girl Students in IT Education
Project approved by Maharashtra State Commission for Women

Name : _____

College : _____

Place : _____

Phone : _____ E-mail : _____

1. Your age:

- a. ≤ 18 b. 19 - 20 c. 21 - 22 d. > 22

2. Social category:

- a. SC b. ST c. OBC d. SBC e. NT f. VJ/DT h. Other

3. Background:

- a. Rural area b. Urban area

4. Course:

- a. B.C.A b. B.C.S c. B.Sc. d. B.E/B.Tech

5. What grade you secured in previous semester?

- a. First class b. Second Class c. Pass d. ATKT

6. Why did you join this course?

- a. Pursue PG b. Career in IT c. Just for degree d. No reason

7. Who encouraged you for this course?

- a. Friends b. Teachers c. Parents d. Self e. Other

-
8. How do you bear expenses of your education? (Select more than one if any)
- a. Parents b. Loan c. Scholarship d. Self earning e. Other
9. What is the total income of your family (per month)?
- a. $\leq 10,000$ b. 10,000–20,000 c. 20,000–30,000 d. $> 30,000$
10. What is the education level of head of the household?
- a. Uneducated b. SSC c. HSC d. Graduate e. PG
11. What is the occupation of head of the household?
- a. Business b. Working c. Govt. job d. Farming e. Nothing
12. Total number of brothers/sisters you have:
- a. One b. Two c. More than 2 d. None
13. Number of brothers/sisters pursuing IT education
- a. One b. Two c. More than 2 d. None
14. What is your parents' planning after the completion of graduation?
- a. PG b. Job c. Marriage d. Not planned
15. Are your parents aware of career opportunities in IT education?
- a. Not aware b. Partially c. Fully aware
16. Cooperation by college administration for learning?
- a. Poor b. Average c. Good d. Very Good e. Excellent
17. Do you get scholarship in time?
- a. Yes b. No c. Not Applicable

18. Support from your teachers in case of difficulties in any subjects?
a. Poor b. Average c. Good d. Very Good e. Excellent
19. Cooperation from your classmates?
a. Poor b. Average c. Good d. Very Good e. Excellent
20. Have you experienced any sort of discrimination in the college?
a. Yes b. No
if “yes”, how _____
21. How confident are you in Software/App development?
a. Not confident b. Partially c. Fully
22. How confident are you in learning latest technologies for better career?
a. Not confident b. Partially c. Fully
23. Do you have Desktop/Laptop at home for practice?
a. Yes b. No
24. Are you aware of Massive Open Online Courses (MOOCs)?
a. Yes b. No
25. Have you enrolled for any online course?
a. Yes b. No
26. What is your planning after the completion of graduation
a. PG b. Job c. Marriage d. Not planned
27. Are you aware of career opportunities after graduation?
a. Not aware b. Partially c. Full aware

28. Are you aware of employability in Mobile App Development?
a. Not aware b. Partially c. Full aware
29. Are you aware of employability in Data Mining?
a. Not aware b. Partially c. Full aware
30. Are you aware of Stand Up India Scheme launched by Govt. of India.
a. Not aware b. Partially c. Full aware
31. If you get job at Call Center (BPO), will you join?
a. Yes b. No
32. In which sector you want to pursue your career?
a. Teaching b. Govt. job c. IT company job d. Self employment
33. What type of career you want to pursue in IT?
a. Developer b. Data Analyst c. Network d. Maintenance e. Other
34. Who is your (woman) role model in your life?
35. Do you want to share anything which is missed in this questionnaire

Thank you for your cooperation,

Dr. Mrs. Rajani S. Kamath

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