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RTES Arts Science and Commerce Degree College Ranebennur, Karnataka, India

Department of Sociology

under the aegis of Internal Quality Assurance Cell (IQAC)

in association with

Research Culture Society

Organises

3rd National Conference on Multidisciplinary Recent Trends Research and Innovation

(NCMRTRI-2022) 30th July, 2022



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Conference Special Issue - 35

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**3rd National Conference on Multidisciplinary
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(NCMRTRI-2022)**

Date: 30th July, 2022

Ranebennur, Karnataka, India

Conference Special Issue - 35

The Managing Editor:

Dr. C. M. Patel

(Research Culture Society and Publication – IJIRMF)

Associate Editors:

Dr. Anand M. Kanapet

Dr. Madhukumar R.

**RTES Arts Science and Commerce Degree college Ranebennur,
Karnataka, India**



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Welcome message from Local organizing Committee

The local organizing committee, extends a warm welcome to the keynote speakers, delegates and Participants of 3rd National Conference on Multidisciplinary Recent Trends Research and Innovation-(NCMRTRI-2022) held at RTES Arts Science and Commerce Degree college Ranebennur, Karnataka, India on 30th July 2022. This is the Third National level conference organized by the Department of sociology wherein we received an overwhelming response from researchers around the nation.

Conference aims to highlight cutting edge research developments **Business & Management:** Accounting, Banking, Business, Economics, Entrepreneurship, Finance, Management, Marketing, Supply Chain, Logistics, Transportation, Tourism, Hospitality, Health Care, Human Resource, Government, Administration, Management, Law.

Social Sciences: Arts, Behavioural Sciences, Culture, History, Islamic, Language, Counselling, Humanities, Organizational Behaviour, Philosophy, Psychology, Politics.

Education: Teaching and Learning, e-Learning, Pedagogy, Interdisciplinary Studies, Religious Studies, Lifelong Learning, Blended Learning, Special Education.

Arts, Social Science, Economics, Humanities, Literature, Management, Applied Science, Finance, Education, Sports, Social Responsibility, History, Geography, Languages, Literature, Linguistics, Political Science, Philosophy, Public Policy, Religion, Sociology, Urban and Regional Planning, English, Modern Languages, Ethnic Studies, Folklore.

We are excited to host all delegates who are joining from across India. Participation of researchers and students in this conference is of prime importance and we have put every possible effort to make to stay comfortable.

We thank you all for your immense support and contribution. We could not hold this conference without your participation.

RTE Society

Date: 30th July, 2022

NCMRTRI-2022



CONFERENCE COMMITTEE



Chief Guest



Shri. S V Sankarur
Member of Legislative Council
Govt. of Karnataka



Dr. Subhashchandra C. Natikar
Coordinator,
Dept of Dr. B.R. Ambedkar Studies,
Karnatak University, Dharwad,
Karnataka, India



Speakers



Dr. M. K. Purushothama
Ph D., D.Lit., M.Com., MBA., M.A., PGDDE, PGDHE, DNCS
Principal
Ramaiah Institute of Business Studies
An Institution M. S. Ramaiah Foundation,
Bangaluru, Karnataka, India



Dr. R. Selvi
M.A., M.phil., Ph.D., PGDCA
Associate Professor
Department of Studies in Economics
Davaanagere University, Davanagere, Karnataka





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Sri. S. V. Sawkar
Director
RTE Society, Ranebennur



Sri. F. H. Machenahalli, M.A., M.Phil
Principal
RTES Arts Science & Commerce
Degree College, Ranebennur

CONVENOR



Dr. Anand.M. Kanapet
Asst. Professor & HOD of Sociology
Organizing secretary and Convener
R.T.E.S Degree College, Ranebennur, Karnataka, India



Dr. Madhukumar R
Asst. Professor of Physics
Convener & IQAC Coordinator
R.T.E.S Degree College, Ranebennur, Karnataka, India

Date: 30th July, 2022

NCMRTRI-2022



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College of Agricultural Engineering
University of Agricultural Sciences,
Raichur - 584104, Karnataka, India



Shri. S V Sankarur
Member of Legislative Council
Govt. of Karnataka



MESSAGE

I am happy to note that an 3rd National Conference on Multidisciplinary Recent Trends Research and Innovation-(NCMRTRI-2022) is being organized during 30th July 2022 by RTES Degree College, Ranebennur, Karnataka

This on Multidisciplinary Recent Trends Research and Innovation is emerging and important area of research which will lay the foundation for new initiative and cutting-edge new trends and innovation, the practical application applications of which are wide ranging and enormous. It is interesting to note the impart a being discussed in this conference range from Behavioral Sciences, Culture, Accounting, Banking, Business, Economics, Teaching and Learning, e-Learning, Pedagogy, science and technology.

I am happy to note that this conference offers a unique platform to the galaxy of delegates, faculties, aspiring researchers, students to discuss cross disciplinary issues leading to fruitful outcome. I am sure that the deliberations in this conference would set a trend for foundation for the future.

My best wishes for the grand success of this National conference.

Shri. S V Sankarur
Member of Legislative Council
Govt. of Karnataka

Date: 30th July, 2022

NCMRTRI-2022



Dr. Subhashchandra C. Natikar
Coordinator, Dept of Dr. B.R. Ambedkar
Studies, Karnatak University, Dharwad



MESSAGE

I am pleased to note that the RTES Arts Science & Commerce Degree College, Ranebennur, is organised 3rd National Conference on Multidisciplinary Recent Trends Research and Innovation-(NCMRTRI-2022) July 30th 2022 at Ranebennur. I also see that the conference has invited Many delegates, Scholars and Students from India and state to discuss various development in area like Behavioural Sciences, Culture, History, Islamic, Language, Counselling, Humanities, Organizational Behaviour, Philosophy, Psychology, Politics, Teaching and Learning, e-Learning, Pedagogy, Interdisciplinary Studies, Religious Studies, Lifelong Learning, Blended Learning, Special Education, History, Geography, Languages, Literature, Linguistics, Political Science, Accounting, Banking, Business, Economics, Entrepreneurship, Finance, Management, Marketing, Supply Chain, Logistics, Transportation, Tourism, Hospitality, Science & Technology etc..

I hope this conference will generate further interest on Multidisciplinary Recent Trends Research and Innovation. I extended my warm greeting and felicitations to the participants and the organizers to make the conference success.

I wish you conference all success

Dr. Subhashchandra C. Natikar

Date: 30th July, 2022

NCMRTRI-2022



Dr. M. K. Purushothama

Ph D., D.Lit., M.Com., MBA., M.A., PGDDE, PGDHE, DNCS

Principal

Ramaiah Institute of Business Studies

An Institution M. S. Ramaiah Foundation, Bangaluru



MESSAGE

I am happy to learn that R.T.E. Society's Arts, Science and Commerce College, Raneebennur, Department of Sociology & Research culture society is hosting 3rd National Conference on Multidisciplinary Recent Trends Research and Innovation-(NCMRTRI-2022)-July,30 2022, wherein eminent academicians, researchers, scientists and industry experts will participate. The theme of the conference is of immense value as it focuses on the importance of multidisciplinary research and education. I am sure the conference throws fresh insights and adds value to the new realms of knowledge I congratulate Shri. S. V. Sawakar, President R.T.E. Society's & Shri. F. H. Machenahalli, Principal, RTES, and the faculties for organizing such a momentous event. I hope that the deliberations at the conference would be useful for improving research culture and utilization of Data.

I wish the conference a grand success!

Dr. M. K. Purushothama

Date: 30th July, 2022

NCMRTRI-2022



Dr. R. Selvi
M.A., M.phil., Ph.D., PGDCA
Associate Professor
Department of Studies in Economics
Davaanagere University, Davanagere, Karnataka



MESSAGE

I am delighted to note that the RTES Arts Science & Commerce Degree College Ranebennur, has organised 3rd National Conference on Multidisciplinary Recent Trends Research and Innovation on July 30th 2022 at Ranebennur.

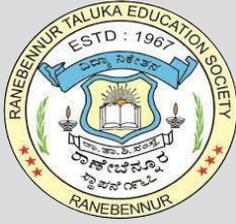
Multidisciplinary Recent Trends and Innovation is essential to communicate and drive policy decisions in various disciplines. I am sure the insights from the research articles from various disciplines will enhance the horizon of alternatives for shareholders concerned and the audiences.

I believe that this conference will motivate new generation and also gives opportunity to the participation of young and enthusiastic delegates, faculties, aspiring researchers, students to present their ideas, concepts and proof of works through an interactive discussion.

Dr. R. Selvi

Date: 30th July, 2022

NCMRTRI-2022



Shri. S. V. Sawkar
President
R. T. E. Society



MESSAGE

I take this opportunity to congratulate the department of social science for organizing the 3rd National Conference on Multidisciplinary Recent Trends Research and Innovation-(NCMRTRI-2022) July 30th 2022 at Ranebennur. The conference provides a unique forum to obtain informative overviews and discuss Recent Trends Research and Innovation.

I strongly believe that this conference has become the benchmark conference where researchers from all over the state and nation present their most ground-breaking results in a wide range of areas in Recent Trends Research and Innovation. NCMRTRI-2022 promises to be the most exciting conference yet.

I hope this conference will generate further interest on Recent Trends Research and Innovation. I extend my warm greeting and felicitations to the participants and the organizers to make the conference success.

I wish NCMRTRI-2022 a grand success.

Shri. S. V. Sawkar

Date: 30th July, 2022

NCMRTRI-2022



Shri. F. H. Machenahalli
Principal, RTES



MESSAGE

I very happy that you are participating in the 3rd National Conference on Multidisciplinary Recent Trends Research and Innovation-(NCMRTRI-2022) July 30th 2022 at Ranebennur organised by Department of Sociology. The scientific mission of this conference is to offers a platform for scholars and young researchers from various disciplines to come tougher, present their recent findings and develop professional links aimed at collaborative research.

More than 100 authors have submitted their Abstract and Full Papers to be included in the conference. The conference is made possible by a dedicated team of organizers and the generous support. While am thankful for their efforts, I would like to thank you for taking time to attend the conference an author, delegates, lecturer.

I would like to extended a very warm welcome and my best wishes for a very productive time in the conference and enjoyable stay at RTES.

With best wishes,

Shri. F. H. Machenahalli
Principal, RTES

Date: 30th July, 2022

NCMRTRI-2022



Dr. Anand.M.Kanapet
Asst. Professor & HOD of Sociology
Organizing secretary and Convener



Message

On behalf of the organizing committee of the 3rd National Conference on Multidisciplinary Recent Trends Research and Innovation-(NCMRTRI-2022) July 30th 2022 at Ranebennur, I have great pleasure to welcoming all the delegates to the conference to be held on 10th August, 2021 in the center for Seminar Hall, RTES Degree college, Ranebennur.

This is the first National level E-conference being organized by IQAC Initiative, has patronized by the Department of Sociology with the support of RTES Arts Science and Commerce Degree College, Ranebennur, Karnataka.

NCMRTRI-2022 is Actively involved in high end research on Advances in Collaborative Research for Social sciences, Business and Humanities including, Art, Literature, Management, Applied science, Sports, Modern Language so on. The conference provides a perfect platform for researchers to share their latest research in multidisciplinary finding in area of applications.

One day National E-conference will cover entire scope of NCMRTRI-2022 on 30th July 2022. There are 50 oral presentations. besides, there are 03 plenary talks on specialized topics by eminent personalities from different parts of the nation.

Our sincere thanks to all the organizations, Academic Institutes and Individuals for their support in conducting this event. I personally express my heartfelt thanks to all the organizing committee members, and my colleagues, researchers and staff for their dedication and handwork, without their support this NCMRTRI -2022 event could not be organized in a befitting manner.

Dr. Anand.M.Kanapet
Asst. Professor & HOD of Sociology
Organizing secretary and Convener

Date: 30th July, 2022

NCMRTRI-2022



Dr. Madhukumar R
Asst. Professor of Physics
Convener & IQAC Coordinator



Message

It is my great pleasure to welcome you to the 3rd National Conference on Multidisciplinary Recent Trends Research and Innovation-(NCMRTRI-2022), at Ranebennur, which takes place in RTES Arts Science and Commerce Degree College Ranebennur, Karnataka on 30th July 2022. It has been a real honor and privilege to serve as the Convener of the conference.

The conference would not have been possible without the enthusiastic and hard work of a number of colleagues. We would like to express our appreciation to the Technical Committees, for their valuable contribution in assembling the good quality conference program.

We also thank **Sri. S.V. Sawkar President of R.T.E. Society and Sri. F. H. Machenahalli, Principal** and the individual track and conference chairs.

A conference of this size relies on the contributions of many volunteers, and we would like to acknowledge the efforts of our RTES members and referees and their invaluable help in the review process. We are also grateful to all the authors who trusted the conference with their work. Special thanks to the Chief Guest of Shri. S V Sankanur, Member of Legislative Council, Govt. of Karnataka, Dr. Subhashchandra C. Natikar , Coordinator, Dept of Dr. B.R. Ambedkar Studies, Karnatak University, Dharwad and Keynote Speakers Dr. M. K. Purushothama , Principal, Ramaiah Institute of Business Studies, An Institution M. S. Ramaiah Foundation, Bangaluru, Dr. R. Selvi, Associate Professor, Department of Studies in Economics, Davaanagere University, Davanagere, Karnataka, and all the panellists for sharing their views on current research topics.

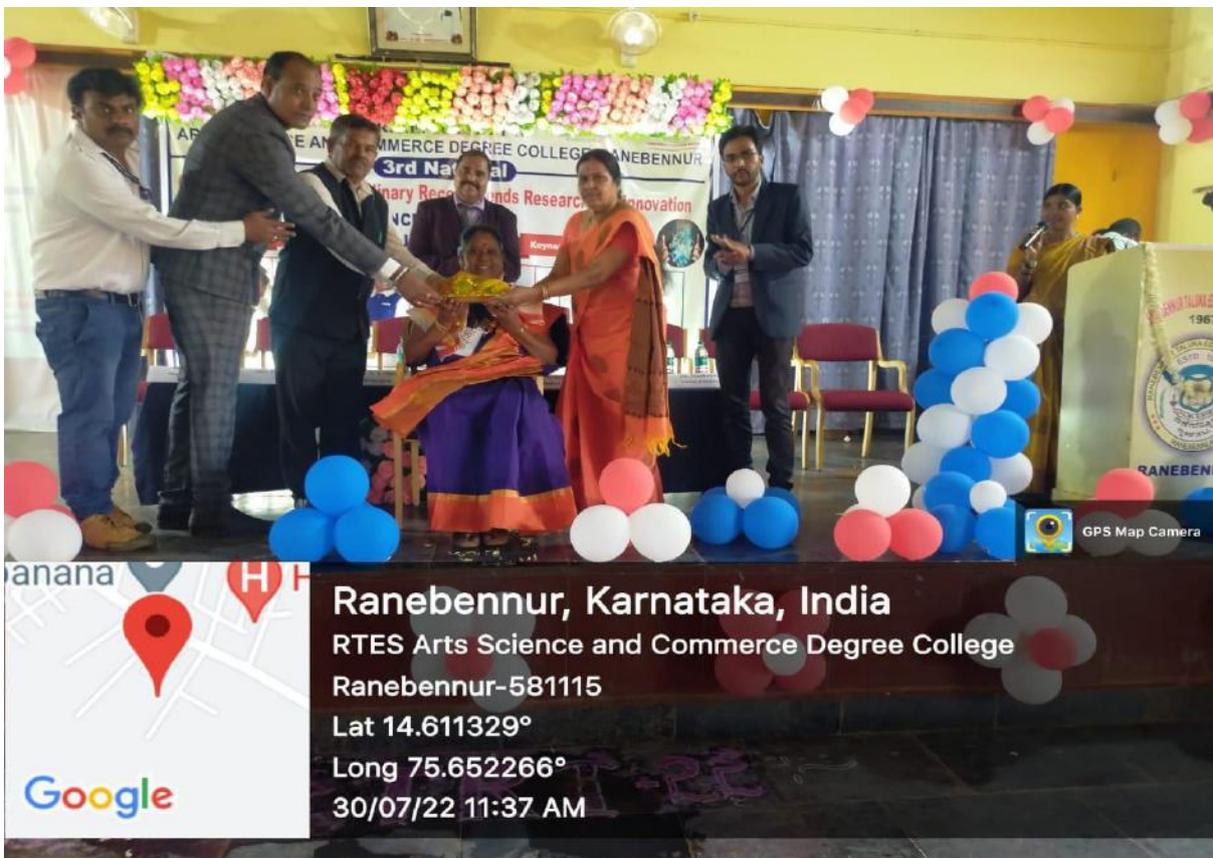
We appreciate the support of our RTES team. We also thank **Dr. Anand.M.Kanapet, organizing secretary and convener**, for his vision and leadership. We look forward to an exciting week of insightful presentations, discussions, and sharing of technical ideas with colleagues from around the nation. We thank you for attending the conference and we hope that you will enjoy all sessions.

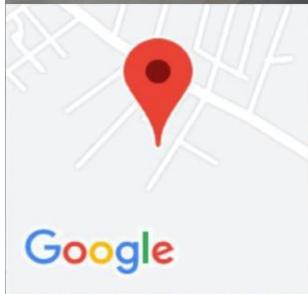
Dr. Madhukumar R
Asst. Professor of Physics
Convener & IQAC Coordinator

Date: 30th July, 2022

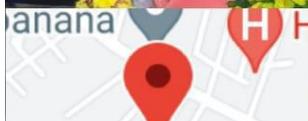
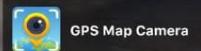
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Conference Photos





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 RTES Arts Science and Commerce Degree College



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Pandemic and its Impact on Social Life

Dr. Ravindra S. Kallolikar

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Abstract: *The entire world was progressing smoothly at its own speed when all at once by the end of 2019, a deadly virus known as covid-19, which means corona virus disease 2019; hit the world system of living, originated from a city Wuhan in China. Gradually it began to spread across the world. It created panic atmosphere among the people of the world, consuming lakhs together lives, within a short span of time. Its impact on all walks of life could be seen. In the present article an attempt is made covid-19 impact on social life. Covid-19 a pandemic disease spread in the initial stage through droplets of saliva discharge from the nose and cough or sneezes, when infected person coughs or sneezes, the disease may spread to surrounded people. For this reason wearing face mask, social distancing and lock down have been implemented by governments throughout the world. The article focuses on the impact of pandemic on social distance, Migrant workers students and teachers and aged men and women. In short, Covid-19 pandemic an unprecedented one, which the people had never seen before such a disease, for which countless people became its victims.*

Key Words: *Cough, Sneezes, Pandemic, Face mask, Social – Distance and Lock down.*

1. Impact of covid-19 on social distancing :

When the Pandemic was spreading at its pace, from one person to many, it become inevitable to keep distance of at least one meter (3 feet). The people had to compulsorily wear face masks, Sanitize and maintain social distance.

As the people were becoming more and more victims of the pandemic the government ordered to close all the activities throughout the country and made it mandatory to maintain social distancing. It is in the root level, ie village panchayat to Parliamentary the govt made it compulsory.

The social distancing was not only implemented in India alone but the pandemic affected countries also imposed on the people to save from corona. In spite Of social distancing when the pandemic was not in control the govts, going another step ahead, declared lockdown process in different intervals. Social distancing and lock down processes affected the people both mentally and physically. Totally the people were in panic situation.

2. Impact on Migrant Workers

Since the social distancing and lock down were strictly implemented, it became inevitable for the migrant workers to move towards their mother localities. The migrant workers were returning their homes from interstate, District, City and village. During their return journey they met accidents and casted their valuable lives. Some migrants faced many abstacles on their way like food, Water and shelter. Meanwhile during pandemic the govts stopped all the transports services like Air, Railway, Bus, and Cab etc. So the migrant workers were in great difficult to reach their destinations.

3. Impact on Students and teachers

During the pandemic situation lockdown was imposed with the result of the same all the educational institutions were also shutdown. The crucial stage and very basic foundation of education sector nursery, school admissions, Board examinations, entrance tests of various universities, competitive examination which were scheduled according to their calendar of events were cancelled. This affected a lot on the students and teachers. To overcome this task, the govt directed to the teaching community to conduct on line classes to complete the syllabus. Internet Problem was another hurdle in this regarded. To meet this challenge the govt introduced 32 DTH channels for E Learning.



4. Impact on Rites and Rituals

During the pandemic situation social distancing and lock down were strictly imposed, this affected a lot on religious costumes' and traditions of different castes and communities. The holy places of different religious like temples, Masjids and churches were closed. All the rituals of different religions as such fares prayers and religions meeting were completely prohibited. The people were psychologically affected.

5. Impact On family and Relationship

The impact of pandemic not excluded on family and relationship large number of violence causes have been listed. These involve psychological, physical, sexual, financial and emotional abuses. In the family frequent quarrels became common. Divorce causes increased division of family was registered. Healthy relationship suffered among the member of the family.

6. Conclusion :

From the above listed points we can draw the conclusion that pandemics impact was lot on all walks of life. No sectors remained unaffected by covid-19. Apart from the demerit of the pandemic we have learnt moral lessons from the pandemic. The lessons such compassion love, live and let live living together etc.

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Womens Empowerment Visavis Economic Development

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Abstract: *In the relatively recent past women confronted enormous hindrances as they looked for potential open doors that would set them on fair terms with men. Returning a simple 25 years, disparity among women and men was generally evident — in college homerooms, in the working environment, and, surprisingly, in homes. From that point forward, the existences of women and young women all over the planet have worked on emphatically in many regards. In many nations rich and creating — they will school more, living longer, landing better positions, and securing legitimate privileges and assurances.*

Key Words: *Women, empowerment, labor, orientation uniformity.*

1. INTRODUCTION:

Enormous orientation holes remain. Women and young women are bound to kick the bucket, comparative with men and young men, in some low-and center pay nations than their partners in rich nations. Women acquire less and are less financially useful than men wherever across the world. Furthermore, women have less an open door to significantly mold their lives and go with choices than do men.

As per the World Bank's 2012 World Development Report: Gender Equality and Development, shutting these orientation holes matters for advancement and policymaking. More prominent orientation fairness can upgrade monetary efficiency, further develop improvement results for the future, and make organizations and strategies more delegate.

Numerous orientation inconsistencies stay even as nations create, which calls for maintained and centered public activity. Restorative approaches will yield significant improvement settlements assuming they center around steady orientation disparities that make the biggest difference for government assistance. To be viable, these actions should focus on the underlying drivers of imbalance without overlooking the household political economy.

2. Objectives

1. To understand the importance of the concept of gender equality
2. To know the results of women's empowerment

3. Method

General analytical method has been used for the study

4. Scope

The matter covers women's studies restricting the vista to economics analysis

5. Blended progress

Each part of orientation fairness — admittance to training and wellbeing, monetary open doors, and voice inside families and society — has encountered a blended example of progress over the course of the last 25 years. In certain areas, for example, training, the orientation hole has shut for practically all women; however progress has been more slow for the people who are poor and face different disservices, like identity. In different regions, the hole has been delayed to cut off — even among well women and in nations that have in any case grown quickly.

In essential schooling, the orientation hole has shut in practically all nations, and it is contracting rapidly in auxiliary training. For sure, in close to 33% of non-industrial nations, young women presently dwarf young men in optional schools. There are more young women than men in colleges in 66% of the nations for which there are information: women today address 51% of the world's college understudies (see Chart 1). However in excess of 35



million young women don't go to class in agricultural nations, contrasted and 31 million young men, and 66% of these young women are individuals from ethnic minorities.

Starting around 1980, women have been living longer than men in all regions of the planet. However, across every emerging nation, more women young women actually pass on at more youthful ages comparative with men and young men, contrasted and rich nations. Therefore "overabundance female mortality," around 3.9 million young women and women under 60 are "absent" every year in agricultural nations (see table). Around two-fifths of them are never conceived, one-sixth pass on in youth, and more than 33% bite the dust during their regenerative years. Female mortality is filling in sub-Saharan Africa, particularly for women of childbearing age and in the nations hit hardest by the HIV/AIDS pandemic (World Bank, 2011, Chapter 3).

The greater part a billion women have joined the world's workforce throughout the course of recent years, and women presently represent in excess of 40% of laborers around the world. One justification for expanded labor force cooperation is a phenomenal decrease in richness in emerging nations as different as Bangladesh, Colombia, and the Islamic Republic of Iran, alongside enhancements in female training. However women wherever will quite often procure not as much as men (World Bank, 2011 — particularly Chapter 5). The reasons are changed. Women are almost certain than men to fill in as neglected family workers or in the casual area. Women ranchers develop more modest plots and less productive harvests than male ranchers. Furthermore, women business people work more modest organizations in less worthwhile areas.

Concerning privileges and voice, pretty much every country on the planet has now approved the Convention on the Elimination of All Forms of Discrimination Against Women. However, in numerous nations, women (particularly unfortunate women) have less say than men with regards to choices and assets in their families. Women are additionally substantially more prone to experience abusive behavior at home — in creating and rich nations. What's more, in all nations, rich and poor the same, less women take part in proper legislative issues, particularly at more elevated levels.

6. Gender equality and development

Orientation uniformity is significant by its own doing. Improvement is a course of growing opportunities similarly for all individuals — male and female (Sen, 2009). Shutting the hole in prosperity among guys and females is as much a piece of improvement as is decreasing pay neediness. More noteworthy orientation uniformity additionally upgrades financial effectiveness and further develops other advancement results. It does as such in three principal ways:

- In the first place, with women presently addressing 40% of the worldwide workforce and the greater part the world's college understudies, by and large efficiency will increment assuming that their abilities and gifts are utilized all the more completely. For instance, in the event that women ranchers have similar access as men to useful assets, for example, land and manures, agrarian result in emerging nations could increment by as much as 2.5 to 4 percent (FAO, 2011). Disposal of boundaries against women working in specific areas or occupations could increment yield by raising women's support and work efficiency by as much as 25% in certain nations through better designation of their abilities and ability (Cuberes and Teignier-Baqué, 2011).
- Second, more noteworthy command over family assets by women, either through their own profit or money moves, can improve nations' development possibilities by changing spending in manners that benefit youngsters. Proof from nations as shifted as Brazil, China, India, South Africa, and the United Kingdom shows that when women control more family pay — either through their own income or through cash moves — youngsters benefit because of additional spending on food and training (World Bank, 2011).
- At last, enabling women as monetary, political, and social entertainers can change strategy decisions and make establishments more delegate of a scope of voices. In India, enabling women at the neighborhood level prompted more prominent arrangement of public merchandise, for example, water and sterilization, which made a difference more to women (Beaman and others, 2011).

7. Equipping advancement

How orientation uniformity advances as improvement continues can best be figured out through the reactions of families to the working and construction of business sectors and organizations — both formal (like regulations, guidelines, and conveyance of taxpayer supported organizations) and casual (like orientation jobs, standards, and informal communities).

Markets and foundations assist with deciding the motivators, inclinations, and imperatives looked by changed people in a family, as well as their voice and dealing power. Along these lines, family direction, markets, and formal and casual establishments communicate to decide orientation related results. This structure likewise helps show how



financial development (higher earnings) impacts orientation results by influencing how markets and foundations work and how families decide. The effect of financial development is displayed in Chart 2 by the "development" bolt that turns the cog wheels toward more noteworthy orientation balance. The "orientation uniformity" bolt shows how shutting orientation holes thus can add to higher development.

This system shows why the orientation hole in schooling enlistment has shut so rapidly. For this situation, pay development (by releasing financial plan limitations on families and the public depository), markets (by opening new work open doors for women), and formal establishments (by growing schools and bringing down costs) have met up to impact family rulings for instructing young women and young women across a scope of nations.

The structure likewise makes sense of why unfortunate women actually face sizable orientation holes, particularly the people who experience neediness as well as different types of rejection, like living in a far off region, being an individual from an ethnic minority, or experiencing a handicap. In India and Pakistan, for example, while there is no contrast between the quantity of young men and young women signed up for schooling for the most extravagant fifth of the populace, there is a hole of very nearly five years for the least fortunate fifth. The ignorance rate among native women in Guatemala is two times that among nonindigenous women and 20 rate focuses higher than for native men. Market signals, further developed help conveyance organizations, and higher salaries, which have commonly preferred the schooling of young women and young women, neglect to arrive at these seriously impeded populaces.

8. Strategy suggestions

To achieve orientation fairness, policymakers need to zero in their activities on five clear needs: diminishing the abundance mortality of young women and women; dispensing with outstanding orientation hindrances in training; expanding women' admittance to monetary open door and in this way profit and efficiency; giving women an equivalent voice in families and social orders; and restricting the transmission of orientation imbalance across ages.

To decrease the overabundance mortality of young women and women, zeroing in on the basic causes at each age is important. Given young women' higher defenselessness (comparative with young men') in outset and youth to waterborne irresistible sicknesses, further developing water supply and sterilization, as Vietnam has done, is vital to diminishing overabundance female mortality in this age bunch (World Bank, 2011). Further developing medical services conveyance to eager moms, as Sri Lanka did from the get-go in its improvement cycle and Turkey has done all the more as of late, is basic. In the space of sub-Saharan Africa most impacted by the HIV/AIDS pandemic, more extensive admittance to antiretroviral medications and decreasing the occurrence of new contaminations should be the concentration. To counter sex-particular early terminations that lead to less female births, most outstandingly in China and northern India, the cultural worth of young women should be improved, as Korea has done.

To contract training holes in nations where they persevere, boundaries to get to on account of destitution, identity, or geology should descend. For instance, where distance is the key issue (as in country region of the Islamic Republic of Afghanistan), more schools in far off regions can diminish the orientation hole. At the point when modified arrangements are difficult to execute or excessively expensive, request side intercessions, for example, cash moves adapted on school participation, can assist with getting young women from unfortunate families to school. Such restrictive money moves have prevailed with regards to expanding young women' enlistment rates in nations as different as Mexico, Turkey, and Pakistan (World Bank, 2011).

To widen women' admittance to financial open door, consequently lessening male-female dissimilarity in profit and monetary efficiency, a blend of strategies is called for. Arrangements incorporate saving women' time so they can work outside the home — for instance, through financed youngster care, as in Colombia; working on women' admittance to credit, as in Bangladesh; and guaranteeing admittance to useful assets — particularly land — as in Ethiopia, where joint land titles are currently conceded to spouses and husbands. Tending to absence of data about women' efficiency in the working environment and disposing of institutional predispositions against women, for instance by presenting portions that favor women or occupation situation programs as in Jordan, will likewise open up financial open door to women.

To reduce distinctions in sexual orientation in family and cultural voice, approaches need to address the consolidated impact of accepted practices and convictions, women' admittance to financial open doors, the legitimate structure, and women' schooling. Measures that increment women' command over family assets and regulations that improve their capacity to amass resources, particularly by reinforcing their property privileges, are significant. Morocco's new family regulation changes fortified women' property privileges by adjusting married couples' possession freedoms over property gained during marriage. Ways of giving women a more noteworthy voice in the



public eye incorporate political portrayal shares, preparing of future women pioneers, and growing women's contribution in worker's guilds and expert affiliations.

To restrict orientation imbalance over the long haul, arriving at youths and youthful grown-ups is vital. Choices made during this phase of life decide abilities, wellbeing, monetary open doors, and yearnings in adulthood. To guarantee that orientation holes don't persevere over the long haul, arrangements should accentuate building human and social capital (as in Malawi with cash moves given straightforwardly to young women to one or the other stay in or return to school); facilitating the progress from school to function (likewise with work and fundamental abilities preparing programs for young women in Uganda); and moving desires (by presenting young women to such good examples as women political innovators in India).

9. Conclusion :

Household arrangement activity is urgent, yet the global local area can supplement endeavors in every one of these need regions. This will require new or extra activity on numerous fronts — a blend of seriously financing, composed endeavors to encourage development and learning, and more powerful organizations. Financing ought to be coordinated especially to the most unfortunate nations' endeavors to decrease abundance passages of young women and women (through interest in clean water and sterilization and maternal administrations) and to lessen persevering schooling orientation holes. Associations should likewise stretch out past those among states and improvement offices to incorporate the confidential area, common society associations, and scholarly foundations in creating and rich nations.

And keeping in mind that such a lot of still needs to be finished, in numerous ways the world has proactively changed by at last perceiving that orientation uniformity is really great for all kinds of people. To an ever increasing extent, we are understanding that there are many advantages — monetary and others — that will come about because of shutting orientation holes. A man from Hanoi, Vietnam, one of thousands of individuals studied for the World Development Report, noticed, "I think women these days progressively appreciate greater equity with men. They can finish anything that work they like. They are areas of strength for extremely. In certain families the spouse is the most remarkable individual. As a rule, men actually overwhelm, yet women's circumstance has incredibly gotten to the next level. Equivalent collaboration among a couple is satisfaction. I think bliss is when equity exist between a couple."

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Falling into poverty in Karnataka: A Household Level study among Social Groups

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Abstract: *The rural households falling into poverty are not only far single factor, usually more factors associated with falling into poverty in rural households. The factors are like more health expenses, social function, and high interest with loan borrowing from private institutions, etc. The factor associated falling into poverty. The SCs and STs Households have decent poverty 25 years ago and have now also fallen into poverty in rural areas. This paper was explained significant factors associated fallen into poverty, the factors are more debt borrowing, health expenditure, marriage expenses, and social function, etc. Thus, the factors were found that the backward area households, as well as forward area households, have fallen into poverty. The objectives are to explore the factors contributed falling into poverty among social groups. The study is based on primary data collected from household survey. the factors such as illiteracy, landlessness of the households, higher Indebtness, and increasing health expenditure leading the people to fall into the state of poverty, there is a need to increase affordable or pocket-friendly financial, educational, and health institutions catering to their needs. Indeed, the Government is incurring huge expenditure on the social sector, but the corporate sector should be encouraged to spend more proportion of their profits on expanding their CSR activities in these districts.*

Key Words: *poverty, social groups, Dharwad and Kundagol, sustainable reduction.*

1. INTRODUCTION :

In spite of several developmental and constitutional efforts was made the incidence of poverty is quite persistent and widespread. It is due to fact that several factors have contributed to the households. Large numbers of households have fallen into poverty. The rural households have lost their owned land for playing cards and drinks. The reasons have fallen into poverty in both areas sample villages. The rural households falling into poverty are not only far single factor, usually more factors associated with falling into poverty in rural households. The factors are like more health expenses, social function, and high interest with loan borrowing from private institutions, etc. The reasons for falling in poverty have been found that higher in backward area sample villages as compared to be forward area. No single factor was associated for fallen into poverty in rural households. Most often combinations of factors have fallen into poverty and pushing the households downward from non-poor to poor in sample villages in both areas. Relatively the richer households have been fallen into poverty in the rural area. 25 years ago the family's has rich and after that families have fallen into poverty.

Across the social groups, the factor associated falling into poverty. The SCs and STs Households have decent poverty 25 years ago and have now also fallen into poverty in rural areas. This paper was explained significant factors associated fallen into poverty, the factors are more debt borrowing, health expenditure, marriage expenses, and social function, etc. Thus, the factors were found that the backward area households, as well as forward area households, have fallen into poverty.

2. Review of Literature :

Anirudha et al. (2003) Authors studied different reasons that account for households falling into poverty, associated reasons households falling into poverty have been relatively less well addressed by national policies and regional programs. They took two districts in Gujarat regarded as a 'backward' district and 'forward' district. Vadodara has experienced significant industrial growth (Joshi 2000). Focused on the different social groups have falling into



poverty. The stages of progress methodology described above represent one effort to under movements into poverty. Suggested a cornucopia of loan and subsidy generating programs has been used to assist households escaping poverty.

Krishna (2003) the study found that different strategies will be required to deal with two movements, relatively little is known; however, out, why some non-poor people fall into poverty, and why some poor people can escape poverty. The methodology developed was piloted over two periods of fieldwork conducted in 12 villages of Rajasthan. Guided few steps work in selected villages the last aspect related to children’s education was pleasing to observe the poorest households people do not send to school reason for falling into poverty. The author advised a combination of policy interventions, including better information about new income-earning opportunities, accessible and reliable healthcare facilities, and credit on the affordable term will certainly help reduce poverty in this region.

Reddy (2004) Studied the impact of “debt repayment” as the reason for falling into poverty most small and marginal farmers and laborers have not accessed to institutional credit, substantial numbers include debt from private sources at exorbitant interest. The author provided empirical evidence that the development of irrigation in some Northern Telangana but did not have poor people. The author suggested specific policies for reduced the poverty.

Hung and Makdissi (2004) Focused that the economic policies to escape from the poverty trap characterized by a subsistence level of per capita consumption in long run. He is the view of the factors escape from poverty trap through technology transfer, child-rearing tax (cost), and manufacturing sector. The author used to model growth with endogenous population.

3. Objectives of the study

1. To explore the factors contributed falling into poverty among social groups; and
2. Offer policy prescriptions for sustainable reduction of poverty especially in rural areas.

4. Hypothesis of the study

1. Indebtedness is more in backward area compared to that of forward area.

5. Research Materials :

The primary data were collected from the sample survey on two stages; first stage household’s survey conducted the entire village. Use the some indicators and found that households condition. The indicators were number of persons, Caste, illiterate, land and condition of household 25 years ago and now. The second stage conducted the selected household through interview scheduled in sample villages.

The district of Dharwad falling under Good performance in HDI is consider forward area and Raichur district which comes under very poor performance is consider as backward area. The Forward area (Dharwad District) has been chosen two taluks, namely Dharwad and Kundagol, from each taluk, two villages namely; Hosatti and Kallapur are chosen from Dharwad taluk and Kundagol taluks villages, namely Inamkoppa and Benakanahalli, the backward area (Raichur District) two taluks namely Sindhnur and Devadurga. From each taluk two villages, namely Jangamarahatti and Chirtanal are chosen from Sindhnur taluk and Devadurga taluk villages, namely Gugal and Hemanal.

Distribution of Sample Households by Area

Districts	Taluks	Villages	Falling HHs Sample
Forward area (Dharwad District)	Dharwad	Hosatti	25
		Kallapur	28
	Kundagol	Inamkoppa	28
		Benakanahalli	20
	Total		
Backward area (Raichur District)	Sindhnur	Jangamarahatti	29
		Chirtanal	29
	Devadurga	Gugal	35
		Hemanal	33
	Total		
Total Sample			227

Source: Primary Survey.



Distribution of Sample Households Falling into Poverty by Social groups

Districts	Taluka	Villages	SCs	STs	Obc	Others	Total
Forward area (Dharwad)	Dharwad	Hosatti	1	1	22	1	25
		Kallapur	2	2	21	3	28
	Kundagol	Inamkoppa	6	12	8	2	28
		Benakanahalli	2	3	13	2	20
Total			11	18	64	8	101
Backward area (Raichur)	Sindhur	Jangamarahatti	7	5	14	3	29
		Chirtanal	4	3	18	4	29
	Devadurga	Gugal	7	3	20	5	35
		Hemanal	10	7	13	3	33
Total			28	18	65	15	126

Source: Primary Survey.

The study has used the simple Stastical tools like Percentage and Multiple response sets occur when a study has a set of related choices or characteristics in which a subject or experimental unit can possess one or more of those characteristics. Therefore study will focus on a specific type of multiple responses set. Applied and created multiple responses set of the table as per multiple responses table to get the result of the study by using SPSS Software.

6. Result and Discussion :

6.1 Factors associated with falling into poverty

A large number of households are falling into poverty in both forward and backward areas. The households are falling into poverty for different reasons respectively like Indebtness, health expenditure, marriage expenses, and heavy funeral expenses and large size family, etc. A large number of families are borrowing loans from private institutions and money lenders loan. The rural households are depending upon agriculture and wage and they borrowing more loans. The data presented in table 5.18 indicate that a large number of households has borrowing loan from the private institution with a high-interest rate for consumption, agriculture, and construction of a house. The Indebtness households were critical situation households falling into poverty having 33.66 percent in forward area and 37.3 percent falling into poverty in the backward area. The sample villages households were 80 percent households fallen into poverty in both areas. The health-related expenses were estimated higher forward area having 23.76 percent and 17.46 percent in the backward area.

Some factors also addressed the second most significant reasons for falling into poverty relates to more expenses on the marriage and death feasts. A large number of families falling into poverty was estimated higher in the forward area as compared to be backward area. The drunker also one of the factors for fallen into poverty in both areas as well as the drunker households has been lost the land and they make more loan for drinks so the households falling into poverty. The crop disease is also the most significant reason for falling poverty in the backward area has 11.11percent as compared to the forward area have 5.94 percent. The heavy funeral expenses are also more significant factor for falling into poverty. The forward area has more celebration and more expenditure on funeral expenses as compared to be backward area.

Table 1: Factors Associated with falling poverty in Forward and Backward Areas (%)

Factors	Forward Area	Backward Area
Indebtness	33.66	37.30
More health expenses	23.76	17.46
Heavy funeral expenses	6.93	8.73
Marriage expenses	8.91	3.97
unemployment	7.92	4.76



Crop disease	5.94	11.11
Dunkers	4.95	3.97
Large family size	1.98	5.56
High dependencies	3.96	5.56
Less salary	1.98	0.79
Unproductive land	-	0.79
Total	100 (101)	100 (126)

Sources: Primary Survey

Hypothesis 1: Indebtedness is more in backward area compared to that of forward area.

From the multiple response table (Table 1) conclude that the there is a evidence for accepting Null hypothesis, thus study has Fail to reject null hypothesis because of indebttness is a major factor to falling into poverty in both areas but it's quite high in backward area (37.30 Percent) compare to that of forward area (33.66 Percent)

The data shows in table 2 indicate that the single factor is not for falling into poverty, more factors decline in poverty in both areas. The more significantly fallen into poverty reasons has more debt borrowing. Health expenditure heavy funeral expenses marriage expenses in both areas. The high-interest rate private loan borrowing is the most significant factor associated with falling into poverty was estimated higher in the backward area having 37.3 percent as compared to be forward area having 33.66 percent. The social groups wise the factors associated with the fall into poverty the significant reason have Indebttness. The debt borrowing has higher in the backward area has fallen into poverty as compared to be forward area. The crop disease factor is also a significant factor fallen into poverty. The social groups wise the crop disease factor was estimated higher in case of Obc and Others category households in the backward area as compared to be forward area. One more factor was unemployment estimated higher in the forward area as compared to be forward area.

Table 2: Factors Associated with Falling poverty by Social Groups in Forward and Backward Areas (%)

Factors/ Social Groups	SCs	STs	Obc	Others	All
Forward Area					
Crop disease	-	-	6.25	25.00	5.94
Drinks	9.09	11.11	3.13	-	4.95
Heavy funeral expenses	-	5.56	7.81	12.50	6.93
High dependencies	-	-	6.25	-	3.96
Large family size	-	5.56	1.56	-	1.98
Less salary	9.09	5.56	-	-	1.98
Marriage expenses	18.18	11.11	6.25	12.50	8.91
More health expenses	36.36	22.22	23.44	12.50	23.76
Indebttness	27.27	38.89	32.81	37.50	33.66
Unproductive land	-	-	-	-	-
unemployment	--	-	12.50	-	7.92
Total	100 (11)	100 (18)	100 (64)	100 (8)	100 (101)
Backward Area					
Crop disease	-	-	15.38	6.15	11.11
Drinks	7.14	5.56	1.54	1.54	3.97
Heavy funeral expenses	10.71	-	7.69	4.62	8.73
High dependencies	3.57	16.67	3.08	1.54	5.56
Large family size	10.71	5.56	4.62	-	5.56
Less salary	3.57	-	-	-	0.79
Marriage expenses	3.57	5.56	4.62	-	3.97
More health expenses	21.43	5.56	23.08	-	17.46
Indebttness	39.29	50.00	33.85	7.69	37.30
Unproductive land	-	11.11	6.15	-	4.76
unemployment	-	-	-	1.54	0.79
Total	100 (28)	100 (18)	100 (65)	100 (15)	100 (126)

Sources: Primary Survey



The data presented in table 3 indicate that the factor loan borrowing was estimated in higher Kundagol taluk having 39.58 percent and 28.30 percent in Dharwad taluk. As well as Sindhur taluk was estimated higher 37.93 percent as compared to be Devadurga taluk having 36.71 percent in the backward area. The health expenditure was estimated at 26.42 percent in Dharwad and 20.83 percent in Kundagol taluk as well as compared to be backward area taluks having lower. The illness problem faced in both taluks and the households are falling into poverty in both areas taluks. The Dharwad taluk having more expenditure on marriage expenses and funerals as compared to be Kundagol taluk. Similarity backward areas taluk has expenses on marriage and funeral lower in both taluks.

The crop disease was significantly associated with falling into poverty in both areas. The Dharwad taluk has higher crop disease because heavy rain falling and the farmers lost their crops and the farmer's households falling into poverty. Relatively compared to Kundagol taluk has lower crop disease. Similarly the backward areas taluks Sindhur has higher crop disease as compared to be Devadurga taluk. The drinkers and unemployment factors have significantly affected households in both areas taluks. The funeral expense factor was estimated higher in 7.55 percent and 6.25 percent in Dharwad and Kundagol taluks.

Table 3: Factors Associated with Falling Poverty by Taluk wise in Forward and Backward Areas (%)

Factors	Forward Area			Backward Area		
	Dharwad	Kundagol	Total	Sindhur	Devadurga	Total
Crop disease	7.55	4.17	5.94	17.24	5.88	11.11
Drinks	3.77	6.25	4.95	5.17	2.94	3.97
Heavy funeral expenses	7.55	6.25	6.93	8.62	8.82	8.73
High dependencies	3.77	4.17	3.96	-	10.29	5.56
Large family size	1.89	2.08	1.98	6.90	4.41	5.56
Less salary	1.89	2.08	1.98	1.72	0.00	0.79
Marriage expenses	9.43	8.33	8.91	1.72	5.88	3.97
More health expenses	26.42	20.83	23.76	18.97	16.18	17.46
Indebtness	28.30	39.58	33.66	37.93	36.76	37.30
Unproductive land	-	-	-	1.72	7.35	4.76
unemployment	9.43	6.25	7.92	-	1.47	0.79
Total	100 (53)	100 (48)	100 (101)	100 (58)	100 (68)	100 (126)

Sources: Primary Survey

The data provided in table 4 indicate that the Hosatti village sample households were estimated higher in the loan borrowing as compared to be other villages sample. The more health expenses factor was estimated higher in Benakanahalli and Kallapur villages in the forward area. The funeral expenditure has more in Inamkoppa and Hosatti village sample households fallen into poverty in the forward area. The marriage expenses have more in the Inamkoppa and Benakanahalli villages as compared to be Kallapur and Hosatti.

The unemployment factor is also a reason for falling into poverty in sample villages households. The Kallapur villages have more unemployment and households are falling into poverty. The health expenditure was significantly falling in poverty for factor in sample villages in the forward area. The health expenditure was estimated higher in Benakanahalli village having 31 percent as compared to the other villages. The factors less salary, large family size, and high dependencies factors were falling into poverty in the sample village households in the forward area.

Table 4: Factors Associated with Falling Poverty by Villages in Forward Area (%)

Factors/ Villages	Dharwad Taluk		Kundagol Taluk		Forward Area
	Hosatti	Kallapur	Inamkoppa	Benakanahalli	
Crop disease	12.00	10.71	-	-	5.94
Drinks	-	3.57	7.14	10.00	4.95
Heavy funeral expenses	8.00	3.57	14.29	-	6.93



High dependencies	-	3.57	7.14	5.00	3.96
Large family size	-	3.57	3.57	-	1.98
Less salary	4.00	-	3.57	-	1.98
Marriage expenses	8.00	3.57	14.29	10.00	8.91
More health expenses	20.00	28.57	14.29	35.00	23.76
Indebtness	40.00	32.14	28.57	35.00	33.66
Unproductive land	-	-	-	-	-
unemployment	8.00	10.71	7.14	5.00	7.92
Total	100 (25)	100 (28)	100 (28)	100 (20)	100 (101)

Sources: Primary Survey

The data presented in table 5 indicate that the factors associated with falling into poverty in the backward sample villages households. The debt borrowing more affected to falling into poverty in sample villages is Chirtanal and Gugal. The Jangamarahatti and Gugal village sample village was estimated higher expenditure on health as compared to the Chirtanal and Hemanal village's households in the backward area. The significant crop disease factors associates with the falling into poverty in sample village's households were estimated higher in Sindhnur taluk villages households as compared to Devadurga taluk villages. The social culture festival and fairs factors also significantly affected villages households like every month the people celebrating festival so the households are fallen in poverty. The heavy funeral expenditure villages like Jangamarahatti and Chirtanal were estimated higher as compared to the Devadurga taluk villages in the backward area. The large family size is also a more significant factor associated fallen into poverty in sample village's households.

Table 5: Factors Associated with Falling Poverty by Villages in Backward Area (%)

Factors/Social Groups	Sindhnur Taluk		Devadurga Taluk		Backward Area
	J.Hatti	Chirtanal	Hemanal	Gugal	
Crop disease	-	-	15.38	6.15	11.11
Drinks	7.14	5.56	1.54	1.54	3.97
Heavy funeral expenses	10.71	-	7.69	4.62	8.73
High dependencies	3.57	16.67	3.08	1.54	5.56
Large family size	10.71	5.56	4.62	-	5.56
Less salary	3.57	-	-	-	0.79
Marriage expenses	3.57	5.56	4.62	-	3.97
More health expenses	21.43	5.56	23.08	-	17.46
Indebtness	39.29	50.00	33.85	7.69	37.30
Unproductive land	-	11.11	6.15	-	4.76
unemployment	-	-	-	1.54	0.79
Total	100 (29)	100 (29)	100 (35)	100 (33)	100 (126)

Sources: Primary Survey

Note: J.Hatti indicate- Jangamarahatti

7. Major Findings, Suggestions and Conclusion :

Major findings

1. The Indebtness households were critical situation households falling into poverty having 33.66 percent in forwarding district and 37.3 percent falling into poverty in the backward area.
2. A large number of families falling into poverty estimated to be higher in the forward district as compared to backward area.
3. The health-related expenses were estimated higher forward district having 23.76 percent and 17.46 percent in the backward area.



4. The crop disease is also the most significant reason for falling poverty in the backward area has 11.11 percent compared to the forward district had 5.94 percent. Heavy funeral expenses are also a more significant factor for falling into poverty.

5. These factors more impact on SCs/STs category households as compared to be non-SCs and ST households falling into poverty in both districts.

Suggestions:

- In the light of the factors such as illiteracy, landlessness of the households, higher Indebtness, and increasing health expenditure leading the people to fall into the state of poverty, there is a need to increase affordable or pocket-friendly financial, educational, and health institutions catering to their needs. Indeed, the Government is incurring huge expenditure on the social sector, but the corporate sector should be encouraged to spend more proportion of their profits on expanding their CSR activities in these districts.
- Our study suggested to effective implementation of the poverty alleviation programmes for poor households and government should be awareness about programmes for all poor and non-poor households.
- To increase the per capita income, enhancement of labour productivity ratio and providing daily job opportunities, and reduced the number of fallen into poverty households.

Conclusion:

The above analysis indicates that the general information of households, demographics, and factors associated with falling into poverty in both areas forward and backward areas. Based on the result more households have fallen into poverty in the backward area as compared to the forward area. The educational background is better in the forward area as compared to the backward area. The gender-wise literacy rate was estimated significantly higher in the forward area as compared to be backward area.

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Challenges and cures of participatory governance

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Abstract: *The possibility that strategies mirror the inclinations of residents is at the heart of a majority rules government. Participatory governance was made to increment such arrangement. Considering the number of assets states that spend on such cycles, we have close to zero familiarity with what befalls the information. The study adds to speculations on the job of the governance in equitable support. Experimentally, its commitment focuses on testing the potential for mediations to uplift the possibilities of participatory governance drives to follow through on their regulating guarantees. Participatory governance drives are government started and residents are approached to offer their viewpoints on a characterized and - contrasted with political race proclamations - more quick arrangement of strategy activities. They present a more hierarchical type of support than different types of resident commitment like cooperation in friendly developments. This renders residents subject to dependable governance of their contribution to request to accomplish influence on strategy.*

Key Words: *governance, fundamental, civil servants, Good Governance.*

1. INTRODUCTION :

Participatory governance takes different structures - going from overviews, partner consultations, deliberative fora, for example, resident juries to resident drove planning processes, alleged participatory planning. Frequently numerous types of support are consolidated and data dense to give briefs utilized in strategy arranging furthermore, execution.

In many examples, residents could come up short on specialized information fundamental to make a persuading request or come up short on friendly associations with structure essential partnerships with additional strong partners. In such circumstances, their endeavors are probably going to go squandered - participatory governance turns into a show without substantial impacts (Irvin and Stansbury, 2004). Civil servants can assemble assets important to make strategy recommendations more interesting to political chiefs and other significant partners. Then again, when resident input is caught by entryways unrepresentative of the interests of the bigger populace, officials assume a critical part in limiting such data furthermore, keeping it from acquiring unnecessary impact over the strategy cycle

2. Objectives

1. To understand the scope and vista of participatory governance
2. To know the working of village panchayat act in exercise of the participatory

3. Method

Analytical method has been employed

4. Scope

This review utilizes an enormous field trial to test (1) whether civil servants entrusted with strategy plan and execution draw in with resident information and (2) whether administrators' commitment with resident info can be expanded by utilizing non-financial prizes and value based correspondence. It finds low standard commitment however that persuasive mediations increment commitment with resident info.

5. Constraints and Claims

Because of the specialized, work escalated nature of strategy making and the sheer inconceivability of directing all activities important to convey strategy, administrators have impressive prudence of what takes care of



into strategy and how strategy is adjusted in the execution cycle. The following area talks about procedures that could be utilized to improve the probability of civil servants acting as empowering agents instead of obstructions to resident information taking care of through into strategy as guaranteed by participatory governance drives.

6. Impetuses for administrators to answer resident information can comprehensively be ordered in two categories:

i) esteem based and conviction based thought and

ii) profession and cycle based contemplations. Different to government officials, who have appointive motivators to answer resident requests, administrators are normal to do so on the grounds that participatory governance drives support majority rule values. They are strategically and lawfully authentic systems for residents to access strategy processes outside the constituent cycle. That's what assuming administrators trust being receptive to resident worries lines up with their command to serve the public, they ought to be persuaded to draw in with resident information. Such inspirations will be reinforced when civil servants private convictions line up with the standard of participatory governance: nearby residents ought to be given voice over neighborhood strategy issues

The second arrangement of impetuses is connected to contemplations connecting with the guidelines by which civil servants need to have as impact of a professionalized organization: participatory governance drives accompany specific methods that ought to be followed. For example, most open organizations expect that outcomes of resident reviews, meetings and participatory planning processes are distributed and freely accessible.

Inspiration can anyway possibly influence execution assuming there is enough mental limit left to send. Indeed, even the most dedicated and driven civil servant is restricted by their mental capacities. With regards to spending plan slices to taxpayer supported organizations, less staff needs to manage a more prominent number and assortment of solicitations. In the event that civil servants don't have the opportunity and mental assets to peruse a ton of data, the impact of further developing inspiration will be restricted, best case scenario. All things being equal, lessening the time and mental assets it takes to handle data could build the rate at which civil servants lock in with it.

7. model

The PRI framework by and large comprises of three level: Gram Panchayat at the town level, Block Panchayat or Panchayat Samiti at the moderate level and Zilla Panchayat at the locale level This plan of the PRI framework increments collaboration among individuals, majority rule cooperation and decentralization.

8. Compelling and Efficient Planning

The 2.5 lakh Gram Panchayats (GPs) in the nation have been shared with offer fundamental types of assistance in the towns and plan for nearby monetary turn of events.

The Gram Sabha (GS) talks about the advancement work plans of the GP called Gram Panchayat Development Plan (GPDP) and the chosen agents execute the plans. Detailing of GPDP further develops proficiency of public governances.

9. Guarantees Good Governance

'Agreement arranged' and 'Support' are two significant mainstays of Good Governance and the PRI helps in guaranteeing both these points of support. For instance, GS is a channel to incorporate the less special segment of society and guarantee their support in the town level governance wherein they can advocate their formative yearnings. This granular perspective is intended to mirror the necessities of different partners

9.1 Gram sabha

Gram Sabha is a body comprising of all people whose names are remembered for the electing rolls for the Panchayat at the town level. The term is characterized in the Constitution of India under Article 243(b).

The Constitution makes reference to that Gram Sabha activities such powers and carries out such roles at the town level as the Legislature of a State may, by regulation, give.

All qualified electors of the town can take part in the Gram Sabha. The choices taken by the Gram Sabha can't be repealed by some other body aside from itself. Challenges With the PRI System

9.2 Absence of Effective Devolution

Nearby government is a state subject in the Constitution, and subsequently, the devolution of force and position to panchayats has been passed on to the carefulness of states. A portion of the significant subjects like fuel and grain, non-regular energy sources, rustic charge including dispersion of power, non-formal schooling, limited



scope businesses including food handling ventures, specialized preparing, and professional training have not been degenerated in specific states.

9.3 Lacking Grants/Funds

In spite of the sacred strengthening, the neighborhood bodies deal with issues of deficient money to do different exercises allotted to them. Moves made through the State Finance Commissions are likewise pitiful in many States. In a large portion of the states, the greater part of the GPs are viewed as hesitant to raise their own wellspring of income (OSR). A couple of GPs can produce OSR as duty or non-charge income by leasing shops, house expense and clean water expense.

Issue of village head On the Panchayati Raj Day in 2015, the Prime Minister required a finish to 'Sarpanch Pati culture'. In any case, it is still a lot of common in the general public, primarily because of orientation predispositions, ladies lack of education and man centric culture.

10. Infrastructural Challenges

A portion of the GPs don't have their own structure and they share space with schools, anganwadi focus and different spots. Some have their own structure however without essential offices like latrines, drinking water, and power association.

While GPs have web associations, they are not practical by and large. For any information section purposes, panchayat authorities need to visit Block Development workplaces which defer the work.

10.1 Absence of Support Staff

The Standing Committee on Rural Development (Chair: Dr. P Venugopal) in July 2018 saw that there is extreme absence of care staff and faculty in panchayats, like secretary, junior architects, PC administrators, and information section administrators. This influences their working and conveyance of governances by them.

10.2 Absence of Convergence of Various Government Programs

There is a reasonable absence of intermingling of different improvement projects of the Center and state legislatures.

For instance, streets in two distinct patches are developed using two unique wellsprings of financing (for example Fourteenth Finance Commission and MPLAD), yet finding one enormous movement with subsidizing from various sources is troublesome. Various rules by various divisions are referred to as a significant requirement for absence of combination of exercises.

11. Moves toward be taken

The proposals of the sixth report of the second Administrative Reform Commission (ARC) can be executed for a superior and powerful working of the Panchayati Raj organizations. Authentic financial federalism for example financial independence joined by monetary responsibility can give a drawn out arrangement. The second ARC had suggested that there ought to be an obvious division of elements of every level of the public authority. The second ARC additionally suggested that state Governments ought to urge nearby bodies to re-appropriate explicit capabilities to public or confidential offices, as might be proper, through empowering rules and backing The Comprehensive and all encompassing preparation requires skill and assets from different topic explicit preparation foundations.

This can be best accomplished by 'systems governance' of foundations worried about different subjects like monetary governance, rustic turn of events, fiasco the executives and general governance.

Review advisory groups might be comprised by the State Governments at the area level to practice oversight of the trustworthiness of monetary data, amplexness of interior controls, consistence with the material regulations and moral lead of all people associated with neighborhood bodies.

12. A few Positive Steps Taken By Finance Commissions

In the unique situation, the Fourteenth Finance Commission (FFC) has considerably expanded the awards to the neighborhood bodies for the period year 2015-16 to 2019-20

The awards gave are expected to be utilized to help and reinforce the conveyance of significant essential public governances. Additionally, the fifteenth Finance Commission has additionally expanded the awards in its break report for year 2020-21 for rustic and metropolitan bodies.

13. Conclusion :

The legislatures ought to put forth satisfactory attempts to decline assets, capabilities, and functionaries to panchayats, so they can actually design financial turn of events and civil rights plans. An engaged PRI is the establishment to an ideal 'Gram Swaraj' as pushed by Mahatma Gandhi.



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Role of Press as Watchdog in Democracy

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Abstract: *The guard dog job has been one of the most broadly examined regularizing elements of the press. In this review, we analyze the public's perspectives toward the news media's guard dog execution and how they relate with trust in news and news aversion, two significant peculiarities for a majority rule government and the soundness of the open arena. We further analyze how individual inclinations (for example political interest, philosophy) and context oriented factors (for example press opportunity) moderate these connections. In view of information from the 2019 Reuters Institute Digital News Report, and controlling for a scope of variables, we observe that across 38 nations, guard dog execution assessments are decidedly connected with trust in news however that they are likewise emphatically connected with more significant levels of information evasion. Last, we find that assessments of media in different capabilities like assisting residents with grasping the main top stories and picking applicable points were all the more unequivocally related to confide in news and lower news evasion levels than guard dog execution assessments.*

Key Words: *guard dog reporting, trust, news evasion, overview, relative.*

1. INTRODUCTION :

The guard dog job has been one of the most generally talked about regularizing elements of the press. This "long-laid out liberal origination of the news media as the news media," as Norris (2012) depicts it, considers the press as "a free watchman situated in common society" that fills in as an offset to strong foundations in the leader, regulative, and legal branches in government yet in addition those in the confidential area too. Researchers have frequently contrasted in their appraisals of how well different types of reporting do such an admired mission (Donohue et al. 1995; Waisbord 2000), do as such in responsive as opposed to proactive ways (Donsbach 1995) or in manners that change across nations as per contrasts in editorial culture (Hanitzsch 2007), however there is little denying its focal spot in the two writers' expert characters and reporting concentrates on grant on the job of information in the public eye.

While there has been a legitimate accentuation on the standardizing meanings of guard dog reporting, on writers' opinion on the guard dog job, and on contrasts in the substance of guard dog news-casting, research taking a gander at how crowds see guard dog news coverage has been significantly more restricted. While studies have sporadically inspected crowd assumptions regarding reporting, including how much individuals say they esteem guard dog news-casting as satisfied or as a fundamental editorial standard (Fawzi and Mothes 2020; Loosen et al. 2020), we actually have barely any familiarity with contrasts among crowds as far as how they view the guard dog job and how much weight they put on it comparative with different elements of news coverage, for example, its job in giving cutting-edge data, focusing on significant points, or examination about the world. Reporting researchers and professionals in some cases expect that crowds believe the news media should view strong pioneers and organizations to be answerable, however crowds may not necessarily view the activities of appointed, crusading columnists in such consistently sure ways. Others may just see such types of reporting as optional contrasted with different capabilities they want from news in their country.

In this review, we analyze the public's assessments of guard dog job execution across multiple dozen media markets. In particular, we look at which job these assessments play comparable to confide in news and news aversion, two factors that act as marks of how much the public qualities reporting both by and large and in their daily existence. Scholarly exploration has been instrumental in showing the significance of confidence in the news for the two



columnists and a majority rules government all the more comprehensively (Hellmueller et al. 2016; Fawzi et al., 2021; Fink, 2019), as well as the positive connection between news utilization for people and the capacity to connect really in their political frameworks (Aalberg and Curran 2012; Carpini and Keeter 1996). In any case, no earlier examination has explicitly thought about which job, if any, mentalities about the guard dog execution of the press plays corresponding to these perspectives and ways of behaving.

The current review tests the idea of these connections while contrasting guard dog execution assessments close by crowd assessments of different elements of the press, for example, giving state-of-the-art data or focusing a light on beneficial subjects. We further test individual-and nation level factors that could influence these connections, given past examinations that have shown that both the guard dog job and our really reliant factors are setting subordinate (Hanitzsch et al. 2018; Márquez-Ramírez et al. 2020; Toff and Kalogeropoulos 2020). We do this by drawing on similar overview information from the Digital News Report 2019 (Newman et al. 2019) which covers crowds in 38 business sectors across five main lands. We view that as (a) guard dog execution assessments are decidedly connected with trust in the news yet in addition emphatically connected with deliberate news evasion (yet feebly); (b) assessments of media in different capabilities like curation (picking pertinent subjects for crowds) and offering examination (assisting individuals with grasping these points) were more grounded positive and negative relates of confidence in news and news evasion, separately, contrasted with guard dog execution assessments; and (c) the connection between guard dog execution assessments and confidence in news is essentially directed by political interest and philosophical limit. At the end of the day, the guard dog job of the press gives off an impression of being most notable chiefly to the portions of the public who are generally profoundly drawn in with governmental issues. Moreover (d), we find no proof that cross country contrasts in the connection between guard dog perspectives and confidence in the news are made sense of by relative degrees of press opportunity or contrasts in the significance that columnists themselves credit to the guard dog job in their nations' media framework. However, we do find (e) residents in less free nations stay away from the news all the more frequently the more they think writers investigate influential individuals as guard dogs, a finding that could be connected with contrasts in discernments about the nature of guard dog reporting between nations. Generally speaking, we find that while guard dog execution assessments are significant for individuals' opinion on the news media, they are not as emphatically or predictably related with news aversion ways of behaving, especially when contrasted and different jobs.

In the next sections, we review the scholarly literature on the watchdog functions of the press and known correlators of trust in news and news avoidance, and we specify our hypotheses and research questions on the basis of this existing research. We then proceed to present the data and the rationale for the strategic sample of the countries we focus on as well as the measures used. This is followed by our results and a concluding discussion which returns to the under-explored matter of audience perceptions about the watchdog function of the press.

2. The Watchdog Function of the Press

The guard dog capability is one of the most significant and examined elements of the news media. The guard dog analogy suggests that columnists ought to go about as makes preparations for strong gatherings in the public arena. Bennett and Serrin(2005) characterize guard dog news coverage as "1) autonomous examination by the press of the exercises of the public authority, business and other public foundations, with a point toward 2) recording, addressing, and researching those exercises to 3) furnish publics and authorities with ideal data on issues of public worries" (p. 169). The news media as the "news media" is perhaps of the main check and balances in the division of abilities in a majority rules government, as well as essential for the security of common and political freedoms (Norris 2000). Scholastic examination on editorial jobs has arranged the "basic — monitorial" capability of reporting as one of six center elements of the calling (Hanitzsch and Vos 2018). As per the creators, this capability envelops three jobs: the screen job, which is connected with being spectators of force in a general public; the analyst job which is connected with analytical revealing and dynamic examination of strong direct (e.g., truth checking), and in conclusion the guard dog job which is connected with significantly more dynamic examination of force in a general public. Researchers don't be guaranteed to see all guard dog reporting in a positive light, notwithstanding. Reporting that perseveringly goes after others has likewise here and there been scrutinized as "junkyard canine" news-casting (Sabato 1991) or a "criminal caution that continues to ring" (Bennett 2003).



Given the variety in significance that crowds put on the guard dog capability and how profoundly they rank its job origination, this study looks to survey guard dog execution assessments as well as what relationship such perspectives might have on two extra factors: how much individuals trust news and how regularly they say they keep away from it.

3. The Watchdog Role and Trust in News

To start with, we think about the connection between guard dog assessments and confidence in news. Trust in news isn't just significant for writers and news associations, yet in addition for a majority rules government. While earlier examination has shown a cozy connection between trust in the news media and how the general population will in general view other political organizations — what Hanitzsch et al. (2018) allude to as the "trust nexus" — trust in at any rate a few wellsprings of expert news assists people with successfully exploring the complex computerized media scene and political data climate (see e.g., Toff et al. 2020). Ladd (2010) has shown, for instance, that the people who need trust in the news are bound to depend on their hardliner inclinations while making assessments of lawmakers. Accordingly, the beneficial outcomes of staying aware of information (e.g., finding out about lawmakers' approaches and assessing them) are halfway subject to confide in news. In a subjective report looking at the connection between trust in news and how individuals assembled and figured out data during the COVID-19 pandemic, Ternullo (2022) shows how those with summed up doubt toward all news battled to frame suppositions and subsequently participate in powerful political activity.

Research taking a gander at what guard dog job assessments mean for trust in news is restricted. Jebril (2013) found that guard dog execution assessments meaningfully affected fulfillment with political news inclusion in Denmark, Britain, and Spain, an idea near however not really equivalent to confide in news. A new report taking a gander at how different news media capabilities foresee trust in news in the United States tracked down that a faith in the ill-disposed job of the news media towards the public authority and organizations is emphatically and decidedly connected with news media trust, while confidence in the context oriented job of the news media (a job that incorporates the press researching government claims) was not found to have a huge relationship with crowd trust in the news (Abdenour et al. 2020).

From one perspective, in the event that crowds see guard dog reporting to be a center capability of the news media, discernments about the disappointment of the press to perform thusly ought to remain closely connected with crowds saying they need trust in the news in their country. That drives us to our most memorable theory (H1): news crowds' guard dog execution and positive assessments will be emphatically connected with trust in news.

Then again, trust in news is formed by a large number of elements past basically perspectives about the guard dog job of reporting. Research has shown that confidence in news is additionally molded by factors going from individual-level variables around the penchant to trust (Jackob 2012) to qualities of the media climate (Fletcher and Park 2017; Kalogeropoulos et al. 2019; Tsfati and Ariely 2014) and political settings in which media associations are implanted (Hanitzsch et al. 2018). Constructivist ways to deal with understanding confidence in the news have additionally highlighted the significance of creation rehearses like straightforwardness and realness as well as local area fixated drives that attention on consideration and portrayal inside newsrooms so inclusion can be more receptive to the regular worries of the crowds media associations look to serve (Coleman et al. 2012; Schmidt et al. 2019). This work likewise highlights that trust is a social idea, laid out after some time through a scope of other regulating capabilities news coverage gives people and networks. For example, as indicated by Hanitzsch and Vos (2018), the enlightening educational capability of reporting is connected with giving precise data about current undertakings to residents. The scientific deliberative capability incorporates the expert job connected with giving top to bottom illustrative data about recent developments. One more commonly talked about job of writers is connected with curation, or "setting the plan of general assessment" (Christians et al. 2009), which according to the crowd's viewpoint can be deciphered as picking significant subjects to cover.

The guard dog capability is one of the most significant and talked about elements of the news media. The guard dog analogy suggests that writers ought to go about as prepares for strong gatherings in the public arena. Bennett and Serrin (2005) characterize guard dog reporting as "1) autonomous examination by the press of the exercises of the public authority, business and other public foundations, with a point toward 2) recording, addressing, and exploring those exercises to 3) give publics and authorities convenient data on issues of public worries" (p. 169). The news



media as the "media" is quite possibly of the main check and balances in the division of abilities in a vote based system, as well as essential for the security of common and political freedoms (Norris 2000). Scholarly exploration on editorial jobs has ordered the "basic — monitorial" capability of news-casting as one of six center elements of the calling (Hanitzsch and Vos 2018). As per the creators, this capability envelops three jobs: the screen job, which is connected with being spectators of force in a general public; the criminal investigator job which is connected with insightful revealing and dynamic examination of strong direct (e.g., truth checking), and ultimately the guard dog job which is connected with much more dynamic investigation of force in a general public. Researchers don't be guaranteed to see all guard dog news coverage in a positive light, notwithstanding. Reporting that determinedly goes after others has likewise in some cases been reprimanded as "junkyard canine" news coverage (Sabato 1991) or a "criminal caution that continues to ring" (Bennett 2003).

Given the variety in significance that crowds put on the guard dog capability and how exceptionally they rank its job origination, this study looks to survey guard dog execution assessments as well as what relationship such perspectives might have on two extra factors: how much individuals trust news and how regularly they say they stay away from it.

4. The Watchdog Role and Trust in News

To start with, we think about the connection between guard dog assessments and confidence in news. Trust in news isn't just significant for writers and news associations, yet additionally for a majority rules system. While earlier examination has shown a cozy connection between trust in the news media and how general society will in general view other political organizations — what Hanitzsch et al. (2018) allude to as the "trust nexus" — trust in any event a few wellsprings of expert news assists people with really exploring the complex computerized media scene and political data climate (see e.g., Toff et al. 2020). Ladd (2010) has shown, for instance, that the people who need trust in the news are bound to depend on their sectarian inclinations while making assessments of lawmakers. Accordingly, the beneficial outcomes of staying aware of information (e.g., finding out about lawmakers' strategies and assessing them) are halfway subject to confide in news. In a subjective report looking at the connection between trust in news and how individuals assembled and figured out data during the COVID-19 pandemic, Ternullo (2022) shows how those with summed up wariness toward all news battled to frame conclusions and in this way take part in compelling political activity.

Research taking a gander at what guard dog job assessments mean for trust in news is restricted. Jebril (2013) found that guard dog execution assessments significantly affected fulfillment with political news inclusion in Denmark, Britain, and Spain, an idea near yet not really equivalent to confide in news. A new report taking a gander at how different news media capabilities foresee trust in news in the United States tracked down that a faith in the ill-disposed job of the news media towards the public authority and organizations is unequivocally and emphatically connected with news media trust, while confidence in the context oriented job of the news media (a job that incorporates

These extra editorial jobs, as well as other saw attributes of information media, including how inclined to the cynicism it will in general be (Lengauer et al. 2012; de Bruin et al. 2021), are remembered to affect how much crowds draw in with news and political data (Valentino et al. 2001) and accordingly trust too. This leads us to our most memorable exploration question (RQ1): What is the connection between guard dog execution assessments and confidence in news comparative with different perspectives about the exhibition of the press?

In any case, Toff and Kalogeropoulos (2020) didn't look at the explanations for news evasion; they concentrate just exhibited that a relationship existed at the nation level between levels of information aversion and press opportunity. As a matter of fact, different elements, including type inclinations, held significantly more noteworthy illustrative power when it came to figuring out variety in news evasion. All in all, regardless of whether guard dog execution assessments are a significant consideration making sense of some evasion of information, they might be less significant than different elements. Subjective investigations of information evasion further highlight this chance. Palmer et al. (2020), for instance, find that numerous routine news avoiders in the United Kingdom and in Spain see news and legislative issues as entwined organizations that many remain comprehensively doubtful of the guard dog standard out and out yet additionally to a great extent pompous of reporting as holding any pertinence to their lives. Past investigations have additionally featured worries about the tone of information and the consistent refrain of "pessimism" (Palmer et al. 2020; Schröder and Ørsten 2016) as another main consideration driving evasion, which is



firmly associated with editorial antagonism (Lengauer et al. 2012) and its adverse impacts (Valentino et al. 2001). At the end of the day, it is challenging to survey how much guard dog execution assessments could shape news aversion or whether different mentalities about news could offset such worries. This prompts our subsequent exploration question: (RQ2): What is the connection between guard dog execution assessments and news aversion comparative with different perspectives about the presentation of the press?

5. Individual- and Country-Level Differences

Aside from analyzing the connection between's guard dog execution assessments with trust in news and news aversion, we are intrigued in describing the general connections as well as in how individual-and nation level contrasts might connect with these elements. At the singular level, how individuals assess the presentation of columnists in their different jobs is connected with how they esteem these different editorial jobs normatively, which may likewise change by country. Moreover, individuals with various individual foundations might esteem the significance of the guard dog standard in view of various norms as well as in this way evaluate their country's news media execution in an unexpected way. In this manner, a significant inquiry is, for which people guard dog execution assessments are most firmly connected with levels of trust and news evasion?

By and large, our discoveries further show that notwithstanding the accentuation that scholastics have put on the guard dog ideal and its significance for trust in news and a vote based system all the more comprehensively, it could be less significant for what numerous crowds really need and anticipate from the news. Responsibility news coverage might be a pivotal majority rule capability of the press, yet it may not be as critical to bringing hesitant crowds once more into the crease as writers or reporting concentrates on researchers in some cases think it is.

Our review has somewhere around three restrictions. In the first place, as verified above we analyze guard dog job execution assessments yet not guard dog job assumptions; we are simply ready to deduce the significance respondents put on the job while settling on appraisals about news or decisions about their own media ways of behaving by looking at how well such assessments connect with these different factors. A more straightforward measure would be ideal. Second, we measure our critical ideas by utilizing a study that has inspected them utilizing single things. Greater batteries of inquiries catching discernments about individual media sources and news media, by and large, could give more solid and predictable measures subject to less estimation mistake. Similarly as with numerous near examinations, we exchange profundity our actions for broadness in our attention on various worldwide media markets. Third, since we depend on cross-sectional information, we don't look at a likely causal connection between guard dog execution assessments and confidence in news/news evasion or the course of these connections. Future investigations could analyze these utilizing board or trial information.

Future research could look not only at watchdog role performance evaluations but also at audience expectations around watchdog role conceptions and how they relate to trust in news and news avoidance, particularly across an even wider range of countries and journalistic cultures. In addition, qualitative research that looks at the more complex relationship between watchdog evaluations and news attitudes and behavior can give important insights and shed more light on these relationships.

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The Impact of Democracy on Poverty Levels

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Abstract: Robert Dahl opined that individuals living in a democratic setup can find better alternatives to meet basic needs such as food, health, education and housing. There are two assumptions that project doubt on this hypothesis. First, democracies are usually developed in more unequal contexts. Second, in democracy, inequality breeds higher levels of poverty. It was found that, in a democracy, both the context and art zons could influence on decreasing poverty levels. Procedural elements are essential to produce better contexts and citizens, through various types of participation, could influence the government to offer better public policies, especially those related to poverty levels. Higher citizen participation levels and with better procedural elements, individuals can perceive that their democracy is of higher standard and they would support more regime. In the analysis it was found that per capita income level is an important indicator of efficiency of citizen participation for political action is only performing agency in terms of efficiency in democracy characterised by rich inhanments.

Key Words: levels of poverty, democracy, empowerment, Poverty alleviation programs.

1. INTRODUCTION :

Economic, political and social performances reach number of factors. The kind of regime and the level of per capita income are two variables that influence the levels of performance, In democracies, on average, have better levels of wealth, industrialization, education and urbanization'. Also individuals under this type of regimes could find better alternatives to meet basic needs like food, health, education and housing². But the averages do not consider the dispersion of the distribution of resources. For Ansell and Samuels³. democracies often emerge in more unequal environments. Because of this whenever analyzing economic, political and social performance, it is essential to analyze the distribution of this among societies. A democratic regime must be attentive in for the interests of the whole society. In low per capita income countries, poverty levels could be one of the main criteria of society. In developing countries, citizens credit democracy with as the best way to achieve higher standards of living'. Democracies have better political and social results than compared to the regime. However, the public policies of poor democracies do not differ much from those of poor non democratic countries⁵. Democracies are failing to offer public policies that benefit the poorest, even though they allocate more resources to provide better services to society than non-democratic countries. The middle and the rich class are those who benefit most from this kind of regimes. The poorest hope for that their economic and social situation gets better with the time. They expect that a democratic regime give them scope conditions to improve. On democracy's a, individuals to have freedoms to express opinions or influence governments to attain better public policies. However poorest yare demanding programs that enhance condition of empowerment and reduce poverty levels.

Poverty levels could be determined consider the pattern of 'minimum levels of consumption'. The most indispensable factor for a decent life could be food, health, education and housing. In this way, poverty could be measured in a multidimensional fashion. However, every need has other dimensions that make measuring poverty more involved Though poverty can be measured with factor that go beyond biological ones, food is one of the most important aspects of poverty⁸. Food poverty lines and food poverty could be measured with a precision approach to as certain poverty level.

1.1 Democratic System & India

After independence India become the democratic republic on 26th January 1950 by introducing its own constitution with a preamble. The term "Democracy" has been used for the first time in the preamble to the



constitution which is based on the concept of popular sovereignty; the framer of the constitution of India provides a representative parliamentary democracy in which the executive is always responsible to the legislature for its actions, policies. Democracy's such as political Democracy, Social Democracy and Economic Democracy are privatising in every democratic set up.

2. The objective of the Study

1. To Understand various attributes of poverty.
2. To Critically appreciate the way poverty precision is obtained
3. To know how poverty can be hindrance to Democracy .

3. Methodology :

To identify the role of democracy in reducing poverty levels, four groups of analysis were made: poor democracies, rich democracies, poor non democratic countries, and rich non democratic countries. In this way, indirectly, it could be measured the relationship between regime and per capita income through some indicators used in this research.

Descriptive statistics, simple linear regressions, multiple linear regressions and regressions with instrumental variables were applied to these groups. The unit of analysis are the countries A country with a per capita income above 15,000 dollars is considered as a rich country. Based on the Polity IV methodology, a country is democratic or not.

The selection and combination of variables had a comprehensive review of democratic theory with the aim of validating or invalidating the arguments of important theorists on the subject. Reliable sources are used with the largest number of regimes in the world. The sources resorted to are World Bank, Freedom House, CIA World Factbook, Global Gender Gap Report, Polity IV, United Nations Development Program, and so on so forth.

3.1 Concept of Poverty in India

Poverty is does not mean that having substantial money to meet basic needs including food, clothing and shelter. However, poverty is just not having enough money.

The World Bank organization it's interpretation of poverty.

“Poverty is hunger, poverty is lack of shelter”

"Poverty is being sick and not being able to see doctor poverty is not having access to school and not knowing how to read poverty is not having a job, is fear for the future living one day at a time"

"In addition to pan city of money. Poverty is about not being able to participate in recreational activities not being able to send children on a day trip with their school mates or to a birthday party, not being able to pay for medications" These are all inter caste of being poor. When people are not included in a society, and they are not well educated and when they have a higher incidence for society. We all pay the price for poverty. The increased cost on the health system, the justice system and other systems that becomes indicators and supporters in poverty has on impact on our economy and Democracy.

3.2 Categorising Poverty.

There are many standards to categories poverty. people who are “always poor” and those who are poor but may have a little more money are grouped together as the “chronic poor” Another group are the “churning poor” and regularly move in and out of poverty.

3.3 Impact of Democracy on poverty levels.

- i. A high rate of infant Death.
India is having the highest child death rates in the world. More than 1.4 million children die before their fifth birth day each year pneumonia, Malaria, and Corona etc.
- ii. Child Labor
In India, child labour below the age of 14 is illegal, although government data show that 12.5 million children between the age of 5 and 14 are employed. Inspire of that 65 million young steers aged 6 to 14 do not attend school but they work in the forms, industries work in forms, industries private residences.
- iii. Lack of Education.
According to UNICEF over 25% of children in India do not receive on education. Girls are more likely compared to being excluded from school. however in India low requires men and women to be treated equally, women, particularly those from lower social castes are regarded as in fierier. The women salary compared to men is critically low and it has been resulted become of lack of education.



iv. On decision Making.

Participation in decision making also in civil social and cultural life, is lacking because of poverty.

When people are poor they do not have a voice in the society and have to rely on others who are more powerful to express their rights and choices.

Poor people will engage in socially unacceptable exercises such as drug addiction, crime, prostitution and terrorism in order to satisfy their life.

3.4 How democracy can reduce poverty

The present study applies the natural experiment method for identifying the impact of decentralization on the allocation of the poverty alleviation programmes. In actual life, democracy is not able to reduce economic inequality or poverty in a democratic country. A small number of rich people possessing a large proportion of the country's wealth and the income of a large number of poor people keep awakening. Poverty is the major reason for the higher economic inequalities.

3.5 Poverty alleviation programs.

1. Integrated Rural development programme (IRDP)- 1978.
2. Pradhan Mantri Gramin Awas Yojana (PMGAY)-1985.
3. Indira Gandhi National Old Age Pension Scheme (NOAPS)- 5th August 1995.
4. Indira Awas Yojana- IAY (Rural Housing)- 1985.
5. The Jawahar Rozgar Yojana (JRY)- 1989.
6. National Family Benefit Scheme (NFBS).
7. Annapurna Yojana-1999.

4. Conclusions:

Poor democracies have poor economic performance compared to other democracies and other types of regime. In addition, poor democracies have a context of high levels of inequality, this increases the risk that citizens of these democracies could begin to sympathize with non-democratic regimes. Civil liberties and political action help rich democracies to reduce their poverty levels and inequality; they will also help to improve their public policies in general. However, unlike rich democracies, the poor democracies, political action is not significant in order to reduce poverty levels and inequality or to improve public policy performance. When poverty levels and inequality decrease, civil liberties and procedural elements help to ensure better public policies and so that citizens support more a democratic regime because they perceive that this type of regime is of higher quality and because they believe that it is important to support it. This reduces the risk that citizens of poor democracies could sympathize with other types of regime,

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DR. B. R. AMBEDKAR'S APPROACH TO INDIAN PUBLIC FINANCE AND POLICY FOR INDIAN ECONOMY

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Abstract: *This paper deals with the economic and Public Finance thoughts which were proposed by Dr. B. R. Ambedkar, who was the father of the Indian constitution. His economic contributions, public finance ideas, the federal system, Employment, Economic growth, and Indian caste system, division of labour are a few which are discussed in this paper. He was an extremely expert economist but his contributions in economics were not recognized in the mainstream of economics, Ambedkar stopped active economics after India became independent and spend most of his time in politics and law. Therefore, he was more popular as a Dalit leader, political leader rather than an economist. But this does not reduce the importance of his thoughts. The significance of his economic and public Finance thoughts and approaches can be judged by their adoption at various levels of India's economic development.*

Key Words: *Economic, Public Finance, Public Goods, Canons of Expenditure, Tax System.*

1. INTRODUCTION:

Dr. B. R. Ambedkar was a thinker, philosopher, and multi-dimensional personality. He was knowledgeable in law, political science, history, sociology, philosophy, economics, and many others and contributed to the number of subjects theoretically as well as applied. Economic thoughts of Ambedkar did not gain so much popularity in mainstream economics, he was more popular as a “**Dalit leader rather than an expert economist**”. But this does not shrink the importance of his thoughts. His majority education and research were in economics. He has also significantly contributed to the economic policy of India in the pre and post-independence period. Ambedkar has very significantly contributed in the many specialized economics fields namely women empowerment and gender studies, poverty, inequality, agricultural economics, industrial and labour economics, development economics, monetary economics, the economics of water and natural resources, the economics of social exclusion, and discrimination, energy, and public economics and policy. Ambedkar has very greatly contributed to public economics in theoretical and applied view (Kamble, 2017). In his time, Ambedkar was a multifaceted personality who made a deep impression on the social-political-economic life of India. Ambedkar provided valuable guidance on the socio-political-economic platform in colonial India and independent India. In the present era, fiscal operations and public finances of India are showing several changes and variations, hence The central government had a huge gap between income and expenditure. The government is facing a high-level fiscal deficit. Indian economy is continuously facing problems in maintaining the fiscal balance and it is a great challenge against macroeconomic stability. This paper importantly examines the economic and public finance thoughts of Dr. Ambedkar concerning the Indian economy and also covered his role in economic development.

2. OBJECTIVES:

- To know the Economics Thoughts of Dr. B. R. Ambedkar and role in Economics
- To know the Public Finance Ideas and Thoughts of Dr. B. R. Ambedkar

3. METHODOLOGY:

This paper gathered information related to thoughts of economics, public finance, and also the role of Dr. B. R. Ambedkar in economic development from various published Journals, Books, research papers, and online



webpages. Data collected on Gross Domestic Product at Market Price at a constant price, Revenue Expenditure and Capital Expenditure, Exports and Foreign reserves from Reserve Bank of India for analysis of the current scenario.

4. ECONOMICS AND DR. B. R. AMBEDKAR

Ambedkar was born in a British-founded town and military cantonment on 14th April 1891 in a poor and backward family. With the help of many scholarships, he becomes a graduate in economics and politics from Bombay University in 1912 and a post-graduate in economics from Columbia University in 1913. He received MA and Ph.D. from the Columbia University of the USA and London School of Economics and Political Science and degrees of law also. He became the first highly educated scholar within the untouchable community in India (Sonane, 2016). During the British rule, when higher middle-class people were returning to their inborn country on they choosing the profession of advocates as the result of achievement of acquiring Law degrees but Ambedkar chose to study economics. These are the major evidence interest of his in economics. He was the first Indian, who traditionally studied economics overseas. Ambedkar's knowledge was not limited to only economics, but he had mastery over many subjects and other fields. On his return from abroad, he pursued a variety of professions and activities.

Prof. A. K. Sen said that “Ambedkar is my Father in Economics and he is a true celebrated champion of the deprived section people. He deserves more than what he has achieved today. he was a highly well-known figure in his home country. His contribution in the field of economics is amazing and will be remembered always.

4.1 The Major Economics Publications of Dr. B. R. Ambedkar are;

- The Problem of the Rupee: Its Origin and Its Solution (published by P S King and Son Ltd, London 1923)
- The Evolution of Provincial Finance in British India – A Study in the Provincial Decentralization of Imperial Finance (published by P S King and Son Ltd, London 1925).
- Small Holdings in India and Their Remedies. Significant academic paper he wrote in 1918 and it published in Journal of the Indian Economic Society, Vol I, 1918.
- Administration and Finance of the East India Company (Columbia University, 1915). This is the unpublished his M.A. thesis.

Apart from these academic economic writings, there are his Memoranda and evidence given to various government commissions, speeches in the different legislative bodies, and book reviews which all have some economic content. All of these have been brought together by the government of Maharashtra in a multi-volume complete edition, “Dr. Babasaheb Ambedkar: Writings and Speeches” (Singariya, 2013)

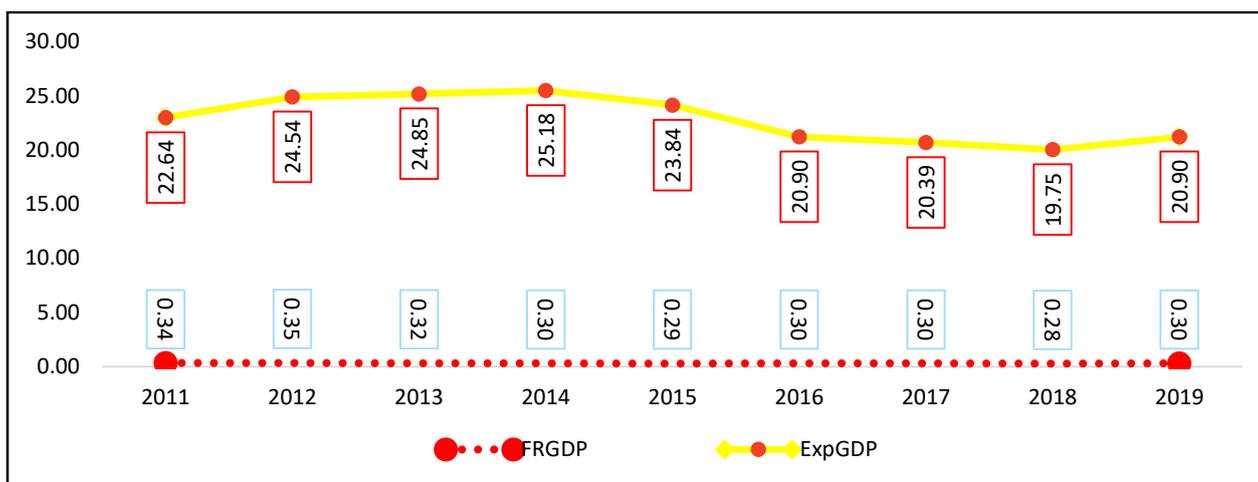
4.2 Abolition of Economic Exploitation of Khoti System

Ambedkar passed a bill against the Khoti system in 1937, which was widely known as the Khoti Abolition Act. The government British used to employ some dominant persons known as Khots. They were intermediaries between the tax collector (i.e. British Government) and the taxpayer (i.e. Inferior landholders). Khots were responsible to hand over the tax revenue collected for the entire empire to the British government, for this they used to freely exploit and abuse the inferior landholders. Such a system was more prominent in the Ratnagiri district, Kolaba district, and Thana District. Ambedkar wanted that this anti-Khoti bill should be enacted in the complete Bombay Presidency (Sunil Kumar 2019). Therefore, Dr. Ambedkar symbolized the problem of physical and economical exploitation of the poor through his movements. His fight against the predominant land tenure system called Khoti was the best example of his thoughts of equilibrium.

4.3 The Problem of the Rupee: Its Origin and Its Solution

This book represents an important contribution to the field of monetary economics. In this book, Dr. Ambedkar examined the evolution of the Indian currency as a medium of exchange covering during 1800 to 1893 and discussed the problem of the choice of an appropriate currency system for India in the early 1920s (Sonane, 2016). A continued devaluation of the Indian currency which while was good for Indian exports, but not good for the Indian economy, had to produce more rupees to pay expenses undertaken in England by India which were in sterling (gold) terms. In but present context, more export higher in the probability of reserve the foreign currency in India and that leads to more economic growth.

Fig. 1: Export and Foreign Reserves as percent to GDP



Note: FRGDP Foreign Reserves to GDP Ratio, ExpGDP Export to GDP Ratio

Source: Handbook of Statistics on Indian Economy, RBI

Therefore, present era, export is the major factor for determining a nation's economic growth and store foreign currency. Foreign reserves save the Indian rupees and also a determinant of Economic Growth. (Fig.1). Ambedkar's commitment was internal stability, and he was convinced that only an automatic system based on the gold standard with gold currency could achieve this desirable end. Like every economist of his generation, he was a believer in the quantity theory of money and was afraid that governments will tend to artificially increase money in circulation. Ambedkar clearly said that increasing and decreasing values of gold and silver have been problematic subject to decide exchange rate. In the era of gold and silver coins are used as a currency, it troubles to fix the standard of gold coin exchange with a silver coin or foreign currency due to change in the price of these metal.

4.4 Employment, Economic Growth and Caste System

As per the view of Ambedkar, the Indian Caste system is the major hindrance to economic growth and development. The caste classification didn't permit people to teach their skills to any individual belonging to other castes. Simply the members of their caste were permissible to learn the profession. Thus if a person had the skill essential for a particular occupation he would not accept the profession of a caste lower than his own. In an energetic industrial set up the individual must be free to choose his profession. But due to social-religious restrictions on inter work-related mobility. The division of work or employment is not based on individual choice. Some of the occupations are socially degrading, and people are forced into these occupations based on their caste origin. Such people cannot obtain occupation satisfaction. Economic association caste, disassociation of cleverness from work. therefore, Ambedkar said that there was absent dignity of labour in the common scheme of the theory of caste (Sailakshmi, 2020). The present scenario little bit changed, and division of labour or employment is based on education level, skill and not based on caste.

5. PUBLIC FINANCE THOUGHTS AND IDEAS OF DR. B. R. AMBEDKAR

5.1 Public Finance and Ambedkar

Ambedkar was a multifaceted personality who had made a deep impression on the social-political-economic life of India of his times. The valuable guidance he provided to the country in economics and particularly in public economics has not been seriously evaluated. Ambedkar's contributions to Public Economics can be evaluated on the two important bases:

First, like Professor Seligman, who considers the book of Ambedkar on Federal Finance as basic research, and second, his guidance in the creation of Federal Finance of independent India which is very important (Jadhav, 1991). Historian Ramchandra Guha stated "Dr. Ambedkar was a great scholar, institution builder and economic theorist" Ambedkar firmly placed among the most outstanding students of public finance and history of economic thought at that time of Edwin R. A. Seligman, who was Ambedkar's teacher of public finance. Consequently, when Ambedkar went to London, his teacher was an equally eminent economist to Edwin Cannan who was also an acknowledged authority on the history of economic thought. This evidence shows that public finance is the most interesting subject to Ambedkar for the welfare of the people but also the mastery in other subjects and field economics.

5.2 Public Goods and Ambedkar

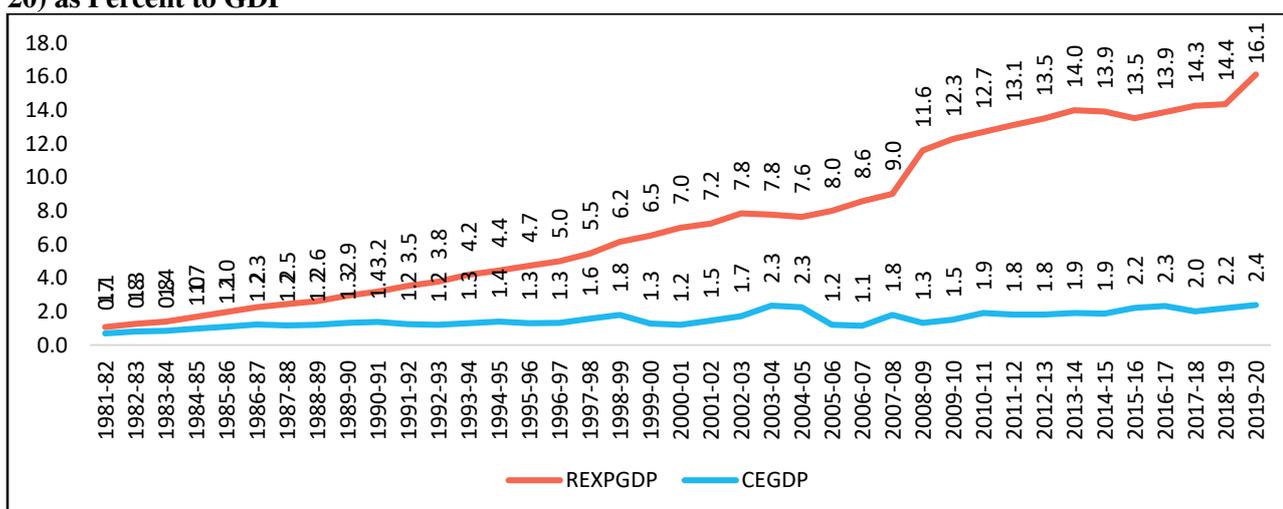


Ambedkar while talking over the functions of the Comptroller and Auditor General said in 1949 during the framing of our Constitution that governments should spend the resources garnered from the public according to rules, laws, and regulations and with faithfulness, wisdom, and economy. A major reason for the being of public finance is that human beings living in society require certain things such as roads, water, education, law, and order, etc. that cannot be enjoyed solely. As the costs and benefits of such items cannot be internalized, they will not be supplied through the free market mechanism. Governments are present to provide these common requirements. Citizens in democratic systems of government are assured by their legislatures to improve their welfare by the judicious provision of such public goods and services, and they place their trust in the government by giving authority to take taxation and expenditure decisions (Singariya, 2013).

5.3 The Evolution of Provincial Finance in British India

In 1925, Dr. B.R. Ambedkar wrote a book on “The Evolution of Provincial Finance in British India”. In this book, he has discussed the origin, development, and mechanism of provincial finance. He has also revealed about the provincial finance under the government of India act 1919. He has covered in this book is a period from 1833 to 1921. Ambedkar has spoken about the problem with the centralization of government finance in India from 1833 to 1871. He found and showed that during this period the fiscal system was defective with destructive taxes and the expenditure done by the government was unproductive. Ambedkar’s public finance thoughts are the most relevant present era of the welfare-oriented nation like India and found the unproductive expenditure (Revenue Expenditure) was greater compare to that of productive expenditure. Unproductive expenditure (Capital Expenditure) was the major cause of to decline in the economic growth as well created fiscal stress and it became defective (fig 2).

Fig 2: Productive and Unproductive Expenditure Central Government in Current Scenario (1981-82 to 2019-20) as Percent to GDP



Note: REXGDP Revenue Expenditure to GDP Ratio (Unproductive Expenditure), CEGDP Capital Expenditure to GDP Ratio (productive Expenditure).

Source: Handbook of Statistics on Indian Economy, RBI

5.4 Decentralization Finance and Ambedkar

Ambedkar proves how the centralization of government finances, which triumphed in India during 1833 through 1871, was a failure because of a defective fiscal system marked by harmful taxes and unproductive or excessive expenditure. After 1858, observed that the imperial government as the lawmaker did not administer the country, whereas the provincial government who administered the country did not have the power to create the laws. The provincial government used to make the budgets and the imperial government had the right to finance these budgets. The provincial government did not have the power to raise its funds and to create appointments in services. This gave the chance to India's government to interfere in the provincial administrative works. India's government started misusing its expenditures and cause create financial strain. In 1871, it was decided that the provincial government should prepare its revenue and expenditure budget. Then, from 1871 to 1876 provincial finance was announced and introduced in the form of a budget (as referred by Ambedkar) and presently this system existed and continued. In this diarchy system, financial accountability was divided among the provincial government and the Center. According to Ambedkar, this scheme led to high taxes and made taxation more irrational (Sunil Kumar 2019, Sailakshmi 2020). According to Hegde, Ambedkar gave importance to revenue powers and developmental responsibilities and its definite distribution between the state and local administration in a good and fair state system.



Ambedkar firmly believed that the Panchayati Raj system will impede the road to the rights and development of the deprived classes (Hegde, 1998).

5.5 Tax System and Ambedkar

Ambedkar spoke his perspectives on tax assessment in the announcement of the Swatantra Majdur Party in 1936 (Nageswari, 2019). He opposed Land Revenue and its framework and their charges as the weight of these assessments are critical on the poor segments of the public. He proposed some duties as follows:

- Tax ought to be forced on the payer's ability and not on pay. It's similar to Pigou's Ability to Pay Theory
- Tax ought to be less on the poor and more on the rich. It is related to the Progressive tax method. Presently India following this one in the tax system.
- Tax exceptions ought to be offered up as far as possible.

5.6 Canons of Public Expenditure and Ambedkar

In 1945, while talking over about the functions of Comptroller and Auditor General of India Ambedkar dire out that government should loyally use the public funds. The revenue which is collected from the public should be used according to rules and regulations. The due value should be given to the accuracy, perception, and financial system. This ideology of expenses the public funds are known as Ambedkar's Canon of Public Expenditure, such as;

- The first important canon of public expenditure is governments should spend the resources garnered from the public as per the way of **faithfulness**.
- From the perspective of the utilization of public funds, **economic wisdom** is a paramount necessity. Therefore, wisdom is the second important canon of public expenditure.
- The third important canon of public expenditure is **the economy**. This means that not a low level of public spending, but it is the rational use of funds so that every paisa fetches the most benefit.

CONCLUSIONS:

Ambedkar was the highest intellectual person of his time. He was an extremely expert economist but his contributions in economics were not recognized in mainstream economics, Ambedkar stopped active economics after India became independent and enthusiastic most of his time in politics and law. Therefore, he was more popular as a political leader rather than an economist. Because of he may think that, after the independence classless society and equality are the major instruments for achieving economic growth. Hence, Ambedkar gives his priorities to Politics and Law for upliftment of Dalits rather than economist. But whatever he has contributed to the field of economics and Public Finance is remarkable. He discussed the evolution of provincial finance under British rule.

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ANCIENT ADMINISTRATIVE DIVISIONS OF HAVERI DISTRICT

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INTRODUCTION:

Haveri district which was earlier an integral part of Dharwad district in Karnataka state was separated from Dharwad district on 24-08-1997 and formed as a new district. At present Haveri district is a vast district consisting of eight taluks namely Byadagi, Ranebennur, Shiggaonvi, Hanagallu, Savanur, Hirekeror, Rattihalli and Haveri. It has 4823 sq.k.m. area. The area is spacious, with highlands, semi-arid plains, and plains. Haveri district shares its border with Dharwad, Gadag, Shimoga, Davangere, Uttarakannad and Vijayanagar districts.¹ Inscriptions and literary texts confirm that the Haveri district was ruled by many royal families of Karnataka from time to time. Also, abundant sources are available as traces of some Mandalikas ruling in different parts of the district under these royal families.

The present research article focuses on ancient administrative divisions of haveri district. Before writing the paper, I have referred some books and inscriptions Volumes. It has been prepared mainly by reviewing the inscriptions found in Haveri district and using supplementary literary works. So far, has spoken about the ancient administrative divisions of Karnataka State, Kalaburgi M.M., (Administrative Divisions of Anciet Karnataka), Basavaraj. K.R (History & Culture of Karnataka), Channabasavayya Hiremath, (Political Divisions of Anciet Karnataka), Chidanandamurthy M., (Cultural Study of Kannada Inscriptions), Gurava R.S. (Tardavadi Nadu), Koppa S.K. (Tardavadi Nadu: A Study), Nagayya J.M. (Inscriptions of Vikramaditya-VI) and Bhojaraja Patil (Nagarakhanda-70)etc.. has undertaken the study.

Just as today India is divided into stats-divisions-districts-taluks-hobalis-panchayats and villages for the convenience of administration. Like that in ancient times the empires were divided into Aharas, Mandalas, Buktis, Vishayas, Deshas for the convenience of administration. Sometimes the names of administrative divisions are preceded by numbers. It can be observed that, these numbers are within the minimum range of tens to lakhs. The administrative divisions in Karnataka with more than 10,000 numbers are Rattapadi Saphardhalakkhe(seven and a half lakhs), Gangavadi-96000, Nolambavadi-32000 and Banavase-12000. Elsewhere administrative divisions with thousands of smaller numbers can be identified. Observing these numbers usually arising some questions in our mind like, what is the reason for the number with an administrative division? what does it indicates? how did this system developed? Etc... Many scholars have presented their views on these questions. S. Krishnaswami Iyengar notes on this that, it symbolizes the revenue of that division or the villages in it.² J.F. Fleet says that, the number after a division indicates the number of villages included in that division.³ B. L. Rice stats that, not only thinks that Banavase-12,000, symbolizes twelve nadus, Gangavadi-96,000, ninety-six nadus, but also says that they denote revenue from that division. Endorsing this, G.S. Dixit says that the numbers below one thousand and one thousand refer to the towns and villages of the respective divisions and the larger number dictates its revenue.⁴ Observing of the above views it can be said that the number after the administrative division may indicate the population or revenue or cultivated land or heads of families or the total number of houses or towns and villages of the respective division, but some large number of divisions may be assumed to be arbitrary numbers used to show that their state is very extensive.

Ancient and medieval Karnatakan inscriptions are found to refer to administrative divisions by names such as Vishaya, Mandala, Desha, Rajya, Nadu, Seeme, Sthala, Kampana, Vente, Valitha, Baliya, Chavadi and Magani. A closer look reveals that before the kings of Vijayanagara, the numbers are indicative of the extent of the territory. But next time; Due to some administrative and political reasons, this number system seems to have declined and the above word forms have been used instead. It is a very difficult matter to decide which of these categories is the largest and which is the smallest. There does not seem to be any definite system behind the use of these regional epithets, as all these metaphors are used in different contexts in the inscriptions of administrative divisions. So it is very difficult to



identify the exact meaning of these forms but the rough meaning can be identified based on the background of their usage in the inscriptions. 'Valitha' has the meanings of Mandala, Rajyabhaga, Samanta Mandala. According to scholars, 'Kampana' is smaller than 'Nadu' division. A 'Seeme' is probably an unusually small division of 'Vente'. A 'Chavadi' was probably a smaller unit than a 'Seeme', consisting of at most four villages, whose administrative center seems to have been the Chavadi. The use of the word 'Magani' is also found and it seems to refer to a village only. It is clear that all these adjectives were used for the administrative convenience of the time.

BANAVASI - 12000

Banavasi Pannirchhasira was an important ancient administrative division consisting of twelve thousand villages. Banavasi was the capital of this region. It was the capital city of Kadambas, which came to power in A.D. 325 and was formerly ruled by the royal dynasties like Badami Chalukyas, Rashtrakutas, Kalyana Chalukyas, Hoysalas, Kalachuries, Sevunas, Challaketanas of Bankapur, Hanagallu Kadambas and Goa Kadambas. Banavasi-12000 province was a vast division which was consisting sub-provinces such as Noorumbada, Ittigi-30, Rattapalli-70, Sattalige-70, Honnavarthy-12, Basavura-140, Kaginele-12, Bennavura-12, Bennevura-12, Tadevoora-12, Arakere-12, Edevatti-70, Nagarakhand-70, Badaveradu-Thirty-six, Kondavati-2, Kalady-96, Gazaganda-600, Jiddalage-70, Mugunda-30, Karbbunalage-70, Araga Kingdom, Mahalige Nadu, Asandi-nadu, Kalavara-nadu, Edadore-70 etc.. It was a famous administrative division during Thirteenth and Fourteenth Centuries.⁵ The inscriptions of Nidagundi, Baraduru, Shadambi, Shiggavi, Halasuru villages of Shiggavi taluk, Kanavalli, Kadakola, Bidaragaddi villages of Haveri taluk, Itagi, Makanuru villages of Ranebennur taluk, Arishinaguppi, Adooru, Kyasanuru, Naregalla, Belavatti, Mantagi, Lakshmi-pura, Havanagi, Hirekanagi, Hombala villages of Hanagallu taluk and Anaji, Kachavi, Gundagatti, Chikkerur, Madalooru, Hamsabhavi, Holabikonda villages of Hirekerur taluk are mentioned this division.⁶ Based on these inscriptions we have decided that, Haveri district was a part of this ancient administrative division.

NAGARAKHAND - 70

The Nagarakhand-70 Kampana (Small Division) seems to have been in existence for the Badami Chalukyas. Gutti Rajya consisting 18 Kampanas in that period Nagarakhand-70 was one of the Kampana which was situated in Gutti Rajya. Bandalike a uninhabitable village of Shikaripura taluk in Shimoga district was the capital of this Nagarakhand-70 division. The division had 70 villages, spread in the Hanagallu and Hirekeru taluks of Haveri district and parts of Shikaripur and Soraba talukas of Shimoga district. Based on the inscriptions Dr. Bhojaraja Patil have identify 90 villages. They are two villages in Hanagallu Taluk, 14 villages in Hirekerur Taluk, 25 villages in Shikaripur Taluk, and 49 villages in Soraba Taluk. Although it is a Kampana of 70 villages, it includes more villages from time to time, but the usual number of 70 is likely to continue. The boundary of Nagarakhand-70 was bounded on the north by the Panangal-500, to the south by the Balligave region, to the east by the Mulagunda-12 and Sattalige-70, to the west by the Edenadu-70, to the north-east Basavuru-140, to the south-west by the Jiddalige-70 and to the north-west by the Varada river.⁷ A.D. 685, Balligave inscription was the first reference of Nagarakhand-70 administrative division.⁸ Most of the inscriptions of this region referred that Chutus, Sendrakas, Senavars, Maturu family, Challaketanas and Bandalike Kadambas were ruled this administrative division.⁹ Emmiganuru and Satenahalli inscriptions of Hirekeruru Taluk referred this division.¹⁰

There were two sub-divisions in the Nagarakhand-70 Kampana, namely Kuppatooru and Tiluvalli. The Kuppatooru sub-division was known as 'Malu-nadu' and consisted of 26 villages. The Tilavalli sub-division, which dates back to the thirteenth century, was called the 'Tilavalli Vente'.¹¹

NOORUMBADA

Noorumbada was one of the administrative division of Gajaganda-600. Nurumbada was the administrative unit comprising over a hundred villages. It was an ancient administrative division covering the parts of Rattihalli, Ranebennur and Hirekere Taluks in Haveri district. Present Rattihalli, the taluk headquarter, was the capital of Nurumbada. The Nurumbada administrative division, which stretches north and east of the Tungabhadra River, comprises Byadagi and Mulagunda to the north, Harihara to the south, Tungabhadra River to the east and southeast, Hirerukur to the west, Masur-12 to the south-west, Panungal-500 to the north-west and Gadag to the north-east. The inscriptions shown that the Narambada was composed of two sub-divisions namely Ratpalli-70 and Ittigi-30 (including Bannivura-12). Based on the inscriptions, at present 39 villages of Ranebennur taluk, 23 villages of Rattihalli taluk, 13 villages of Hirekerur taluk and 2 villages of Byadagi taluk were identified. Totally more than 77 villages have been identified, but there are still 23 villages to be identified.¹²



ITTIGE - 30

Ittige-30 was the sub-administrative unit of Noorumbada. Present Itagi village of Ranebennur Taluk was Its headquarter. Agadi inscription mentions this sub-division as 'Vittige Moovattu'.¹³ Another inscription of Agadi village mentions that when king Dhora was ruled Banavasinadu, at that time Aichanna ruled over Kuduvannaganda-70 and Ittige-30.¹⁴

RATTAPALLI - 70

It was the sub-administrative unit of the Nurumbada Kampana. Present taluk headquarter Rattihalli was the capital of this division. Hole-Anveri inscription of 1049 A.D. contains the description of the village of Anaveri donated by Mahamandaleshwara Chamundaraya and Ketarasa to the Ramathirthakshetra of Rattapalli-70.¹⁵ An inscription of Ittige mentioned that Nalgavunda Ayichanna ruled Kuduvannaganda-70 and Ittige-30. The same thing is mentioned by a Hiremaganuru inscription.¹⁶ Scholars comment that Kuduvannaganda-70, which was mentioned in inscriptions was the ancient name of Rattapalli-70. Hole-anweri inscription is also mentioned Rattapalli-70 sub-administrative unit.¹⁷

BASAVURU - 140

This Basavuru-140 was a Kampana of the Banavasi-12000 Mandala. The capital of this Kampana was the village of Hirebasuru, south west of Hanagallu town. Inscriptions have shown that, Senavara and Khachara families were ruled this Kampana as Mandalikas, for more than five centuries. Basavuru-140 Kampana covered the western regions of the Byadagi and Haveri taluks of the present Haveri district and the eastern regions of the Hanagal taluk. Varada River was the northern and western boundary of this Kampana. Basavuru-140 shares its boundaries with Puligere-300 to the north, Nagarakhanda-70 to the south, Sattalige-70 and Belahuge-70 to the east, Panungal-500 to the west and Mulagunda-12 to the south-west. Villages belonging to Basavuru-70 Kampana have been identified by inscriptions. 15 villages of Haveri taluk, 15 villages of Byadagi taluk and 12 villages of Hanagal taluk, together with 42 villages were identified now, remaining 98 villages yet to be identified.¹⁸

The inscription of Kabbura of A.D. 1026 mentions that, Basavura-140 was ruled by Kannama of Senamalla family.¹⁹ An inscription of Koluru of A.D. 1045 mentions that, Basavura-140 was ruled by Kaliyammarasa.²⁰ Inscriptions of Devagiri(Haveri Taluk), Hirebasuru(Hanagallu Taluk) and Hirehalli(Byadagi Taluk) are mentions Basavura-140 division.²¹ Kaginele-12 and Kalakeri were two sub-divisions of 'Basavuru-140' Kampana. An inscription in Gottagade (Hirehalli) mentions that the area was under the administration of Kaginele-12. Except this, there is no explanations are not found for these two sub-divisions in inscriptions.²²

SATTALIGE – 70

Sattalige-70 was a sub-division of Gajaganda-600 administrative division. Sathenahalli(Hirekere Taluk) was the capital city of the Sattalige-70. Abbaluru inscription of A.D. 1200 refers that "Banavasi Pannirchchaserada Kampanam Sattaligeypattu".²³ Sathenahalli inscription of A.D. 1204 not only refers "Banavasi Nadolagana Kampanam Sattaligeypattumam", but also refers Kiriya Muchandi and Konavatti(Hirekonati) villages were including this sub-division.²⁴ An inscription of Ukkunda (A.D. 1088) referred that "Sattalige-70ra baliya bada Morkunda", which states that Ukkunda belonged to the Sattalige-70.²⁵ Bogavi inscription also refers Sattalige-70.²⁶ Above these inscriptions states that Sattalige-70 sub-division was consisted villages of Hirekerur and Ranebennur Taluks.

MASAVURU - 12

This Masavuru-12 was a sub-Kampana of Sattalige-70. Its main town was Masuru in Rattihalli taluk. Halenidnegilu inscription referred to as "Banavasenadolagana Kampanam Masavura".²⁷ An inscription of Meduru village mentions that "Masuru Panneradamam".²⁸

KUNDURU - 12

It also seems to be a sub-division of Sattalige-70. Meduru inscription has a reference of Kunduru- Twelve.²⁹

PANUNGAL - 500

Panungal-500, was a sub-division of the Banavasi-12000 province. It was under the rule of Hanagallu Kadambas, the feudatories of Chalukyas of Kalyana. The town of Hanagallu, the present taluk headquarter, was the capital of Panungal-500. Panungal-500 sub-division included the southern part of the Shiggavi taluk of Haveri district, some parts of the Ranebennur taluk, the western and southern parts of the Haveri taluk, part of the Soraba



taluk of the Shimoga district, as well as some parts of the Mundagoda taluk of the UttaraKannada district. The Panungal-500 administrative division had sub-divisions such as Hosanadu-70, Edavolal-70, Two Jehalige-70, Kondaratte-70, Palambi-70, Bagale-70, Kundavura-30, Elambi-20, Nidagundage-12 etc. The list of five hundred villages is completed only when the above nine sub-divisional villages have been consolidated, and the information of the 482 villages were available. Remaining 18 villages information yet not available.

It has been known from the tenth century to the thirteenth century A.D. that it was ruled by various royal dynasties from time to time.³⁰ Hanagallu, Gudagudi, Gejjehalli, Naregalla, Niralagi, Belavatti, Malagunda, Sheshagiri inscriptions of Hanagallu Taluk, Shadambi, Shiggavi, Aratala, Kunnuru, Nidagundi, Bankapura, Madli, Shyabala, Hiremanakatti, Hunagunda, Hulugur, Hottur inscriptions of Shiggavi Taluk refer to Panungal-500.³¹ Balambeedu, Aduru, Kalakeri inscriptions also refer to Panungal-500 administrative division.³²

KONDARATTE -70

It was a sub-division of Hanagal-500, comprising the western part of the Shiggavi taluk of Haveri district, the eastern part of the Mundagoda taluk of the Karwar district, and the south-west of the Kalaghatagi taluk of the Dharwad district. Probably Kontakuli-30 seems to be a sub-division of it. Hulaguru inscription of A.D. 1245, refers to the Kondaratte -70.³³

KONTAKULI - 30

It was also a sub-division of Panungal-500. Kontakuli-30 has been identified as a sub-Kampana of Kondaratte-70, covering some parts of the Mundagoda taluk of Uttara Kannada district. According to Dr.R.N. Gurava it was a sub-Kampana which was containce 30 villages and comprises some villages of Mundagoda, Shiggavi, and Kalaghatagi Taluks.³⁴ Aratala inscriptions of the A.D. 1122 and Hirebendigeri inscriptions of A.D. 1163 are refers this administrative unit.³⁵

ELAMBI - 20

It should be a sub-division of Palambi-70 which was sub-unit of Panungal-500. Niralagi inscription mentions "Panungal-500ra kampana elambiyirpattara baliya basaluru ". At present Niralagi, Basalur, Chikkakannuge and Pombili villages were identified in this division.³⁶

NIDAGUNDAGE-12

It was a sub-administrative division of the Hanagallu-500 Kampana and present Nidagundi village of Shiggaon taluk was its main town. There were twelve villages in this division including Munavalli, Hotturu, Kalyana, Bada, Shiggavi, Shabanuru and Pallavuru villages. Shiggavi, Shabanur and Bankapura inscriptions of Shiggavi Taluk, refer to Nidagundi -12.³⁷ An inscription of Shiggavi mentions that "Panungalla-500ra kampanam Nidagundage panneradara baliya Pallavuram". This inscription is clearly refers that Nidagundi-12 was a sub-administrative unit of Panungalla-500.³⁸

EDEVOLAL - 70

It was also a sub-administrative unit of the Hanagal-500, which includes some parts of the Hanagallu taluk of the Haveri district, Sirsi taluk of the Karwar district and Soraba taluk of the Shimoga district. Araleshwara, Arishinaguppi, Hanagallu, Kyasanuru, Gejjehalli and Mooduru inscriptions of Hanagallu taluk refer to the Edevolal-70 administrative division.³⁹ Syabala inscriptions of Shiggavi taluk also refer to the Edevolal-70.⁴⁰

KUNDAVURU - 30

Prasent Kundavuru village of Shiggavi Taluk, was the main town of Kundavura-30, the Kampana of Panungal-500. Alavalli, Ishwarapura, Guddadachannapura, Gavundavalli, Moolavalli, Kallavana, Hotturu, Belagali, Semburu, Koradihalli, Koluru, Karuru, etc. villages were located in Kundur-30 division.⁴¹ A.D. 896 inscriptions of Guddadachannapura refers this administrative unit.⁴² Shirahatti(Lkshmeswara Taluk) inscriptions of A.D. 1107 states that "panungalianurara kampanam kundavuru muvattara baliya badam kallavanam".⁴³

PULIGERE - 300

This division, consisting of three hundred villages, was called Purigere, Huligere, Purikara and Purikaranagara. Sirahatti taluk of Gadag district, Lkshmeswara village was the capital of this division. There were 300 villages in this administrative province. The division comprising some villages of Shirahatti, Gadag, Mundaragi taluks in Gadag district, Haveri, Savanuru and Shiggavi Taluks in Haveri district, Kundagola and Hubballi taluks in Dharwad



district. Puligere-300 shares its boundaries with Elambi-20 and Nidagundage-12 to the north, Mulagunda-12 to the south, Kukanuru-30 and Kelavadi-300 to the west and Varada river to the south.⁴⁴ It was ruled by the Kings of Rashtrakutas, Challaketanas and Chalukyas of Kalyana. Scholars comments that Masavadi-140, Belahuge-70, Perbala-70 were the sub administrative units of this division.⁴⁵ Nidagundi, Bankapura, Shiggavi, Hirebendigeri, Hulaguru and Hotturu inscriptions of Shiggavi Taluk, refer to the Puligere-300 Kampana.⁴⁶

BELAHUGE - 70

This was a sub-division of Puligere-300. It consisted, the northern part of Haveri taluk, the southern part of Shirahatti taluk, and the eastern part of the Savanur taluk. Present Belavigi village of Haveri Taluk, was the main (capital) town of this division. Galaganatha inscription of the Haveri taluk refers that "Belahugeyappattarolagana sarvanamasyada Palguni".⁴⁷ Palguni which was referred in this inscription was the ancient name of Galaganatha.⁴⁸ Negaluru and Honnatti inscriptions of Haveri district refers this division. A.D. 1163 inscription of Guttala village, states that Vikramaditya of Gutta family was ruled Belahuge-70, Pannavatti-12 and Bennevuru-12.⁴⁹

KALADI - 96

Some inscriptions referred that Kaladi-96 division as a Kampana of Puligere-300 region. Chikkamalluru, Hirebendigeri and Hulaguru inscriptions of Shiggavi taluk referred Kaladi-96.⁵⁰ Dr. Srinivasa Ritti comment that, present Karadagi village of Savanuru Taluk was the capital of this administrative division. Kaladi-96 is mentioned in Mantravadi inscriptions of Savanur taluk and Hulaguru inscriptions of Shiggavi taluk.⁵¹

SOME OTHER ADMINISTRATIVE DIVISIONS OF HAVERI DISTRICT

BENNAVURA-12

Ranebennur the present Taluk headquarter, was its capital. This division refers in Guddada-Anveri inscription.⁵²

I (hi) CHCHANGI NADU

Present Ichangi village of Haveri Taluk was Its main town. Hirekittur village was in this division.⁵³

PUNNAWANTI - 12

The present Honnatti village of the Ranebennuru Taluk was the capital of this division. An inscription of the Rashtrakuta period of the time reveals that Kalivitta, son of Lokate, ruled Punnawanti-12.⁵⁴ Guttala inscription of A.D.1163 refers this administrative sub-division.⁵⁵

KEREYA - 12

Hirekeruru town, the present Taluk headquarter, seems to have been its capital. It has been identified as the "Place of Piriyaakareya-12 ". It was said to be a sub-division of Basavuru-140.⁵⁶

MUGUNDA- 12

Chinnamulagunda of Hirekeruru Taluk was the main town of this division. It is mentioned in the Meduru inscription.⁵⁷ An inscription of Balligave mentions "Banavase Nada Kampanam Mugunda Panneradara".⁵⁸

TEDEYURU - 12

This administrative division is mentioned in the Ukkunda inscription of the Ranebennur Taluk.⁵⁹

BENNEVOORU - 12

Its administrative center was today's Motebennur village of Byadagi Taluk. Makanuru inscription refers to 'Bennevoorpanneradu'.⁶⁰ An inscription of Guttala village also mention this division.⁶¹ Motebennur inscription refers this as "Bennevoora Sime".⁶²

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E-Commerce Trends in 2022

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Abstract: *The development and various e-commerce market segments in India are examined in this paper. International investors are investing in the e-commerce industry since it is one of the fastest-growing industries in India and offers a large opportunity for investments. According to the study's findings, e-commerce in India could potentially grow if the government gives it the legal certainty and structure it needs and permits domestic and foreign trade to broaden its use of fundamental rights like property rights, confidentiality, financial fraud prevention, consumer safety, etc.*

Key Words: *E-commerce, Digital India, digitalization, Online travel and online shopping.*

1. INTRODUCTION

E-commerce is a component of e business, that also implies it is a powerful selling tool and a plain distribution network, whereas the plain distribution network is a substitute way to deliver goods to consumers as opposed to the conventional distribution chain, which relies on middlemen like part timers, distributors, and resellers. The e-commerce framework, to put it simply, is comparable to the direct distribution network in that it uses internet sites to collect purchase requests and shuttles products and services directly from manufacturers to end users, cutting out the middle - man from the distribution chain. Explicitly, information technology (IT) is fundamentally altering how businesses are conducted throughout the world, as well as the e-commerce system has traditionally already undergone a complete transformation into a technology economy.

E-commerce has revolutionized how businesses operate in India. "From US\$ 46.2 billion in 2020, the Indian e-commerce industry is projected to rise to US\$ 188 billion by 2025. It is predicted to generate US\$ 350 billion by 2030. Indian e commerce is expected to grow by 21.5 percent in 2022, expected to reach US\$ 74.8 billion". "India's e-commerce sector is anticipated to grow to 111 billion and 200 billion US dollars by 2024 and 2026, respectively. A surge in internet and mobile phone usage is primarily responsible for the sector's expansion. Due in large part to the "Digital India" effort, there were 830 million highspeed internet worldwide in 2021. 55% of all internet access were in metropolitan areas, and 97 percent of those links were wireless".

1.1 STUDY AIMS

According to the analysis above, most of the research has been done to identify security precautions for online marketing as well as the variables affecting how customers perceive e-business. However, particularly, the research was not carried out to jointly analyze India's current e-commerce development and industrial section.

2. RESEARCH OBJECTIVES

By focusing only on B2C business models, this study's aims were to:

- (i) evaluate the expansion of e-commerce in India; and
- (ii) present e-commerce business sectors in India.

3. METHODOLOGY

The study is performed with the use of simple average annual growth (development over the prior year), which are secondary in origin and gathered from previous research and compounded average annual expansion.



4. DISCUSSION & ANALYSIS
MARKET SIZE

The market for online groceries in India is “predicted to grow at a CAGR of 33%, at US\$ 3.95 billion in 2021-22 to US\$ 26.93 billion in 2027. India's consumers digitalization is predicted to increase from US\$ 537.5 billion in 2020 to US\$ 1 trillion by 2030, led by the rapid use of online services like e-commerce and e-learning in the nation”. By 2025, Grant Thornton projects that India's e-commerce would be valued US\$ 188 billion. India passed Canada and rose to the eighth-largest e-commerce industry in 2020 with a \$50 billion revenue, following only France.

The Indian e-commerce marketplace is anticipated to increase from US\$ 38.5 billion in 2017 to US\$ 200 billion by 2026, driven by expanding smartphone adoption, the rollout of 4G networks, and growing consumer income.

E-commerce is currently heavily reliant on the internet and cellular phone popular uprising, that have changed radically how businesses communicate with their consumers. E-commerce had also begun taking the world of department stores by torrential downpour and attracted the attention of a whole generation of leaders with e-commerce endeavors with vaunted valuations. Throughout the last twenty years, soaring technology and smart phone infiltration have shifted the way of interaction and do marketing. The largest companies have already broken out of another billion-dollar range because of the recent exponential development, and in particularly, e-commerce in India has seen substantial growth as seen by the size of the e-commerce industry throughout the recent time, as seen in the accompanying Table 1.

As per the Global Data, a top reporting and analytics organization, the Indian e-commerce business has experienced rapid development over the past few years. This trend is expected to retain as e-commerce sales are predicted to increase by 21.5 percent to hit INR5.5 trillion (\$74.8bn) in 2022.

E-commerce has changed how people purchase in India over the past several seasons, helped along by rising Internet and mobile phone usage, rising consumer technology skills, and government-led digital capabilities. The transition to online buying has been driven by the COVID-19 epidemic. The introduction of fresh options will further encourage individuals to choose online channels.

“E-commerce payments in India are anticipated to expand at a compound annual growth rate (CAGR) of 18.2% between 2021 and 2025, reaching INR8.8 trillion (\$120.3bn) in 2025, as per Global Data’s E-Commerce Analytics”.

The COVID-19 epidemic has accelerated customers' move to mobile transactions in most nations, a trend which is also seen in India, according to Ravi Sharma, Banking and Payments Lead Analyst at Global Data.

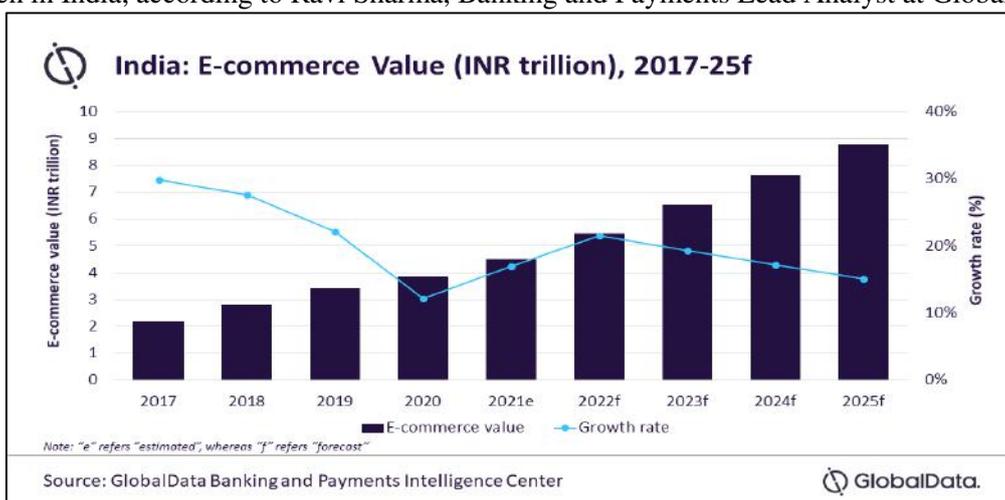


Table 1: India: E-Commerce Value

Prior to the epidemic, Indian shoppers were at ease purchasing non-essential goods like fashion and electronics, but this tendency is now evident even for necessities like groceries. The two biggest competitors in this market are Blinkit (previously Grofers) and BigBasket, with Amazon and Flipkart both creating a name for themselves.

Electronic payments have benefited from the growth of e-commerce since businesses are promoting it to customers. Flipkart implemented rapid response (QR) code-based payments for start paying shipping in June 2021 to facilitate non-cash payments and allow customers to migrate from standard shipping payment to UPI-enabled electronic payments.



With more consumers favoring online buying over in-store purchases, Sharma concludes: "An exciting period 's coming for India's e-commerce & payment industries".

5. RESULTS

Insurtech, wealthtech, and other new usage cases are expanding, and the RBI will soon introduce the Digital Rupee.

ELECTRONIC LOANING

In addition to improved risk operations and service delivery approaches, the previous several years have seen an increase in ticket prices and consumption from Tier-II, III, and IV sectors. Purchase now, pay later Payday lenders and other modern consumer lending businesses like BNPL stoked interest from investors in lending tech start-ups. Micro-lending systems are starting to proliferate, and more microlending start-ups are collaborating with banks to execute personal loans online.

BLOCKCHAIN

Digital Rupee: The RBI introduced a virtual currency blockchain - based, according to a February 2022 announcement by the Indian government.

"To execute letters of credit, GST invoices, and e-way bills using blockchain, a group of 15 banks established Indian Banks' Blockchain Infrastructure Company Private Limited (IBBIC)".

Additionally, India was the source of four of the top ten fintech transactions in the Asia-Pacific region in 2021.

NEW USE CASE STUDIES

WealthTech: There are approximately 440+ WealthTech firms in India that offer robo advisers, digital brokers, economic analysis, and personalized financial accounting.

InsurTech: India has also seen increased investments in the sector and is utilizing AI and ML to develop tailored product lines.

Neobanks began to appear in 2021; they are fully digital financial service providers without physical branches.

MARKET COOPERATING

To resolve problems and offer a smooth client experience, banks are working with FinTech.

To provide loans to MSMEs, an Indian bank formed a co-lending agreement with a capital market company.

A major Indian bank and a fintech start-up collaborated to create a supervised and personalized debt consolidation service.

GOVT. SUPPORT FOR THE DIGITAL WORLD

The Government of India (GoI) is making ongoing efforts to provide a framework for development and innovation in the fintech industry through programmes including the Inter-Ministerial Steering Committee (IMSC) on Fintech, Joint Working Groups on Fintech, and GIFT City.

Emphasis on the cashless economy: Rapid rise in digital payments is anticipated (led by UPI). Open API systems in India, such as Aadhar, UPI, Bharat Bill Payments, and GSTN.

In the past two years, the pandemic has caused several long-term changes in consumption and way of life. Along with the enormous expansion of digital convenience, all these modifications, advancements, and discoveries occurred. Digital platforms are becoming essential partners for everything from product research to product purchases to the purchase of services like insurance. These "digital consumers" are wealthier, better educated, and more engaged than the ordinary Indian internet user. They depend on e-commerce platforms for their item researching and purchasing needs, and they also have a wide range of hobbies and a sophisticated lifestyle.

The "Content Strategies for the New-age Digital Consumer" playbook, a comprehensive manual for developing material communication skills for the interactions in e-commerce platforms, was released by WPP's GroupM and Wunderman Thompson in collaboration with Amazon Ads.

With the aid of this playbook, marketing and agency workers will be better able to re-evaluate their online content initiatives. To effectively promote exposure and memory with thousands of "intent" customers, it discusses the main arguments for why businesses ought to have a different communication approach for ecommerce interactions as well as suggestions for content and interaction tactics.

**Several important lessons from the playbook:**

Rise of the "Digital Consumer": According to a survey by MMA-GroupM, 350 MM Indian customers will likely create an online purchase in 2025, a significant increase from the 150 MM who did so in 2020.

The significance of e-commerce networking in the itineraries of consumers: In India, 80% of urban online consumers utilize e-commerce websites for online comparison shopping, and 25percent of them do so even for offline buys.

Utilize audience intelligence tools to better know your target audience (TG) using deterministic affinities signals regarding product study and purchasing.

Establishing retail preparedness with the best detailed webpages, innovating with comprehensive and connected encounters through Storefronts, audio management, influencer-led evangelism, and hyper-personalized linguistic communication are all examples of digital marketing drivers for generating integrated encounters.

Given the change in customer behavior over the past two years, brands have attempted to alter their marketing strategy. Shoppers used to prefer visiting companies to complete their buys before digital began to take over our life, but now days, regardless of the commodity, it's fascinating to observe consumers conducting exhaustive research online before making purchases either online or in-person. There is a need for a different communication strategy since digital consumers are investing greater and greater time on new digital channels.

During COVID-19, we observed a rapid expansion in the number of consumers switching to online buying. As more people purchase online from Tier 2 and Tier 3 cities, the tendency is only expected to increase.

Marketplaces like Amazon are increasingly where people go to find products, so businesses must have a unique content strategy to interact with consumers there.

Our lives are now completely dominated by digital channels, which have permanently altered our motivations for making purchases as well as how, what, and wherever we purchase. Ecommerce markets are essential in not just assisting but also influencing product and brand identification. Instead of limiting oneself to "commercial rental properties," advertisers have had the unique chance to forge relations with consumers thru a comprehensive multimedia experience.

6. CONCLUSION :

Even though the first stage of e-commerce development in India was characterized by low broadband infiltration, a comparatively tiny internet shopping viewer base, slow online media pace, reduced consumer acknowledgement of online shoppers, and an insufficient transport and logistics, the second stage of e-commerce development in India does have the possibility to be even more successful given the current business climate. The entrance of LCC into the Indian aviation industry, the advancement of OTAs, online ticketing programmes, the launch of numerous online retail websites, creating a strong market position, social networking room for creating an identity, linking with consumers for responses and marketing new product development, etc. are the key factors that led to the spread of e-commerce in the phase two.

Online travel and online shopping are two crucial categories that have aided in the expansion of e-commerce in India. Even while online travel held the top spot from 2014 to 2016, its share fell in 2016, and e-commerce, in addition to maintaining its second place, had a large increase in its share in 2016.

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Higher Education and Research to Build a Better Future: Issues and Recommendations

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Abstract: *The paper deals with the higher education system and the research and its traditional form. It also highlights about rethinking research and higher education to build a better future. Further knowledge integration for effective action and some of the issues to consider for making it a happen in India.*

Key Words: *higher education system, critical reasoning, scientific community, Knowledge Integration.*

1. Introduction :

The higher education system in India has grown in a remarkable way, particularly in the post-independence period, to become one of the largest systems of its kind in the world. However, the system has many issues of concern at present, like financing and management including access, equity and relevance, reorientation of programmes by laying emphasis on health consciousness, values and ethics and quality of higher education together with the assessment of institutions and their accreditation. These issues are important for the country, as it is now engaged in the use of higher education as a powerful tool to build a knowledge-based information society of the 21st Century.

2. Access and Equity

Today the world economy is experiencing an unprecedented change. New developments in science and technology, media revaluation and internationalization of education and the ever expanding competitive environment are revolutionizing the education scene. A paradigm shift has been noticed in higher education now a days, from 'national education' to 'global education', from 'one time education for a few' to 'life long education for all', from 'teacher- centric education' to 'learner centric education'. These changes make new demands and pose fresh challenges to the established education systems and practices in the country. Because of interdependence and integration of world economy in recent years, the Indian higher education system has a new role and a challenge to provide to the nation and the world at large, skilled human power at all levels, having breadth of knowledge and confidence to effectively confront the social and economic realities.

3. Orthodox view of research

To reproduce the existing levels of knowledge and to improve the critical reasoning capabilities and specific skills of individuals, both as an input into their public and private work activity and into the development of a democratic, civilized, inclusive society for the preservation and transmission through education of knowledge, culture and social values. To increase the knowledge base by pursuing knowledge for its own sake and for the creation of wealth. Scholarship and research should be pursued by universities, both for their inherent value and in order to produce a stock of useful knowledge that might be applied elsewhere for the benefit of society. This is not easily achievable in the developing world's universities, although there may be some good research groups clearly a minority – that manage to work to solve local, regional or national problems and still be part of the inter- national scientific community



4. Rethinking Research and Higher Education to Build a Better Future

Higher education must become more evenly distributed to improve the chances of economic and social development. The role of education in this process is taken as a given – a point of departure and it is assumed that knowledge and skills will be at least as important for the future of the developing in this century as they were for developed and industrialized countries in the past. Admittedly, the worldwide higher education landscape and research and knowledge sectors are undergoing a profound transformation driven by unprecedented global social and economic forces and are embedded in an extremely complex reality, in which no self-evident choices are available and where actions have multiple effects in a dynamically interdependent environment. The size of the academic enterprise has grown tremendously in the past century.

5. Knowledge Integration for Effective Action

There is broad agreement that mankind faces three main challenge in these early years of the 21st century: freedom from want, freedom from fear and the freedom of future generations to sustain their lives on this planet. Science, technology and innovation are central both to the origins of these three millennium challenges and to the prospects for handling them successfully (Annan, 2000). They are important forces in the positive and negative trends of development.

6. Issues to consider

The lack of agreement in the literature as to what constitutes teaching excellence in higher education is striking. Comparative research looking at perceptions of teaching excellence across different disciplines, universities and countries is needed. However, this is unlikely to be an easy task, as just as definitions of quality change over time and from one context to another, so too do definitions of excellence.

Future research on teaching quality in Higher Education should take on board the complex relationships between proxies for teaching quality and actual teaching quality. Particular attention should be paid to how definitions of effective teaching evolve over time due to changing student needs, new modes of delivery, changing employer needs and technological innovation. There is relatively little research in to academics' understanding and perceptions of teaching excellence and further research in this area is so rely needed. It would be particularly helpful to look at how academics and students from the same institutions and courses perceive teaching quality and excellence, and also how these perceptions may change over time. There is also the issue of shifting thresholds, and how these can be accommodated in systems designed to measure excellence.

There is a relative paucity of literature on the potential for using types of learning engagement as a metric in a set aimed at identifying learning excellence. This may warrant further detailed investigation as a separate research topic when developing a potential battery of metrics for teaching excellence.

There is no evidence on how teaching quality metrics can be broken down to different groups of learners, particularly groups differentiated by learner characteristics rather than subject/programme studied. The metrics that might pick that up – student engagement – are measured on voluntary completion of survey instruments, which may not be applied to all final year undergraduates in an institution, and will certainly not be completed by all final year undergraduates. Survey instruments are in any case meant to be anonymous. Disadvantage and under-representation will also be specific to programme and to institution, depending on catchment, fees and other characteristics. Some of the issues are:

1. Localization of the state university system
2. Lack of clear policy frameworks for entry of new
3. Education providers to the higher education system
4. Lack of mission differentiation between several types of institutions
5. Trust deficit of public in higher educational institutions
6. Lack of dynamic learning goals and curricular relevance
7. Research Orientation in Higher Education
8. Challenges of the affiliation system
9. Bridging the gap between school education and higher education
10. Last mile problems in ICT for Higher Education
11. Financing patterns and self-financing of higher education institutions
12. Governance Deficit
13. Academic Audit
14. Distance Education
15. Alternative Education for College Dropouts



16. Sports and Extra-curricular Activities

Neither the benefits accruing to Higher Education Institutions from an increase in teaching quality nor the views of employers regarding teaching quality in Higher Education have been systematically explored.

7. Recommendations

1. Establish new universities of higher learning in all disciplines, and increase the number of new and innovative Academic Staff Training Colleges and Interdisciplinary Centres for advanced research in Higher Education
2. Enhance infrastructural facilities and upgrade the existing ones
3. Enhance research in terms of the award of doctoral, postdoctoral, D. Lit., degrees and in terms of research publication.
4. Research output and patents from universities to be increased considerably
5. All institutes of higher education should be classified on the basis of scientifically devised criteria and should be given targets to achieve in terms of research and publication, extension activities and other related areas
6. Establish monitoring and facilitation cells for accessing UGC and other funding agencies.

8. Conclusion :

It is true that enhancing social access to higher education is still important in the country. But, the major challenge before the Indian higher education system is to bring equity in quality of education across the length and breadth of the country. This is more close to the heart of students in rural, semi urban and urban areas, because they also wish to be able to participate in the new economic revolution.

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Fundamental Interpersonal Relations Orientation of Director Of The Organization

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Abstract: *Fundamental Interpersonal Relations Orientation (FIRO) explores of interpersonal relations, introduced by William Schutz in 1958. This theory mainly explains the interpersonal interactions of a local group of people. This technique was created to measure how group members feel when it comes to inclusion, control, and affection/openness or to be able to get feedback from people in a group. Aim of the assessment was to find out the interpersonal behavior of Director of the organization by using FFIRO-B questionnaire. By results it could be seen that the participant has scored more in expresses inclusion and expressed control which shows that he takes initiative include others in what he does, and is directed by oneself. Comparatively he has very low score in expressed affection, wanted inclusion and wanted control.*

Key Words: *interpersonal relationship orientation, inclusion, control.*

INTRODUCTION:

Fundamental Interpersonal Relations Orientation (FIRO) is a theory of interpersonal relations was introduced by William Schutz in the year 1958. The theory explains the interpersonal interactions mainly of a local group of people. The theory is actually based on the belief that whenever people get together in a group, there will be three main interpersonal needs they looking to obtain – 1. Affection/openness 2. Control and 3. Inclusion. Schutz has developed a measuring instrument which contains six scales of nine-item questions, and it has become version B (for "Behavior"). This technique was introduced by him to measure how group members feel when it comes to the matter of inclusion, control, and affection/openness or else to be able to get feedback from people in a group.

The FIRO-B includes three main areas:

- Inclusion
- Control
- Affection

Each area is modified by two main factors:

- Expressed Behavior
- Wanted Behavior

In short, Expressed Behavior is mainly related to how comfortable an individual feel about exhibiting behavior towards other people. Wanted behaviors on the other hand, relates to the level an individual want other people to exhibit a behavior towards him. When Expressed Behavior and Wanted Behavior is applied to the three main areas of the test FIRO-B: Inclusion, Control, and Affection and we will end up with six main sections of the FIRO-B test as followed:

Expressed Inclusion: This combination dictates the level to which an individual make an effort to include others in your activities as well as the extent that an individual work to get others to include himself in their events. The higher the score, the more likely an individual is to want to engage socially and wishes to join a larger amount of social groups.

Wanted Inclusion: This combination will show an individual the extent that individual want others to include himself in their activities (without you instigating it), and his/her need to belong. The higher the score is the more likely an individual is to want to be invited to social gatherings and also social groups. Unlike Expressed Inclusion, this combination doesn't mean an individual will necessarily initiate the request, but an individual do want to be invited and included.



Expressed Control: This section tells an individual about the extent that he feels comfortable influencing others and the degree that an individual make an effort to control a situation. If the Scoring is higher its related to one's comfort with the organizing and taking responsibility for others.

Wanted Control: This score is connected with an individual's comfort level of being in a situation with clear instructions and expectations, where his situation is pre-defined by others. In other words, an individual's comfort level with someone else in charge and influencing the direction of his actions.

Expressed Affection: This combination is associated with the extent to which an individual tries and engage with people on a personal level. The higher the score is, the more comfortable an individual with supporting others and being open with them.

Wanted Affection: This combination tells an individual how comfortable he is with others taking a personal interest in him and acting warmly toward him in general. If an individual has a higher score here, then he tends to be more comfortable with others encouraging other person and sharing personal matters with others.

Company's Profile:

The present study was conducted on Company which was started with zero investment by, Company was registered as Proprietorship under Shops & Establishment Act, The main objective of the company was to source not only active even the passive candidates to companies & help identify and apply to hidden jobs of the companies which won't advertise in media, Directors personally handled all the departments like sales, recruitment etc.

In 2011 the company was incorporated into a Private Limited Company. Signed a SLA with KSFIC (State Government). Constructed own office building, updated ATS software with billing & CRM Integration. In 2005 the organization was under proprietorship as Global HR consultancy, 2011 established as Pvt Ltd as Dipsons consultancy services. Dipsons is connected with 1000+ clients. Dipsons is a rapid recruitment job portal. Which provides with job to job seekers and right candidate to client in short time. Dipsons is involved in end to end recruitment process. Clients and consultants are connected with the software. Through which clients are provided with right person for the right job.

Organization chart:

Director	
Business development Head	HR Recruiters
Accounts executive	Quality control

METHODOLOGY:

Aim: To find out the interpersonal behavior of Director of the organization by using FFIRO-B questionnaire

Objective:

- To understand the Fundamental Interpersonal Relations Orientation of the director of company
- To study the Fundamental Interpersonal Relations Orientation of leader

Method of data collection: Case Study.

Employee profile:

Name (initial): RD. Age: 35. Sex: Male

Education qualification (details): MBA

Marital status: Married

Nationality: Indian

Type of family: joint

His journey as director: Director was asked some questions about his journey as an entrepreneur, and from proprietorship to Private limited organization. As an entrepreneur he believes the core has to be risk taking and strong will to establish one self. And he shared how he was betrayed by his own employees and robbed his data base, and after then he adopted many strategies of manipulations and also he agreed that cooperates do more manipulations and use business gimmicks to sustain in the market. And he believes job drives mainly are focused on branding and then to get incentives for working on those days, and least to select candidates.

MATERIALS REQUIRED:

- FIRO –B questionnaire contains 54 statement



- Answer booklet
- Writing materials
- Manual for scoring and interpretation

PROCEDURE:

Firstly consent has to take from the participant after the approval from the participant ten briefly introduce the purpose of the particular test and then the necessary demographic details regarding the subject has to be noted down .after that hand over the transformational leadership survey questionnaire the participant and instruct the subject as follows “there are 18 statement for you, you need to do is read each and every statement carefully and there are four alternatives that are rarely , sometimes and often and almost always .what you have to do is read each and every statement and choose your response from the alternatives that is best suit for you ,there is no right or wrong answer ,feel free to choose the best according to you ,even though there is no time limit but do as early as possible” after that instruct the subject to start marking .after completing the test take back the answer booklet from the subject and conform whether the participant attempt all the statement after that thank the subject for the cooperation.

PRECAUTIONS:

- Make sure the subject understood the instruction
- Make sure the subject attempted all the statement

RESULTS:

Table: showing the obtained scores of the employee.

	INCLUSION	CONTROL	AFFECTION	total
EXPRESSED behavior toward others	04	04	01	09
WANTED behavior towards others	01	01	03	05
Total	05	05	04	14

Above the table is showing that the employee score in FIRO- B. He has scored 04,04, and 01 in expressed behavior towards others in inclusion, control and affection, the total score is 09. Wanted behavior towards others he has scored 01,01,03 respectively an inclusion, control and affection score, and the total score is 05. Inclusion in expressed and wanted behavior total score is 09 and the control total score is 05and the affection score was 04. The social interaction index score was 40.

DISCUSSION:

Aim of the assessment was to find out the interpersonal behavior of Director of the organization by using FFIRO-B questionnaire.

By results it cloud be seen that the participant has scored more in expresses inclusion and expressed control which shows that he takes initiative include others in what he does, and is directed by oneself ,he prefers to establish satisfactory relationship with other people in general, and have need for power in dealing with others it shows leadership and decision making power of the participant as the director of an organization and mainly owning the company these qualities are essential. After this he is slightly into wanted affection which shows he awaits for other to take a first move in showing affection, closeness or establish deep relationships. Comparatively he has very low score in expressed affection, wanted inclusion and wanted control.

CONCLUSION:

- He has high scores in Expressed inclusion.
- He has same scores in expressed control.

RECOMMENDATIONS & LIMITATIONS:

The researcher can assess the role of socio-demographic data such as Socio-economic status and psychological variables. Further research on the variables can explore the area more with good number of samples.



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Effect of spot application of organic manures in varied land configuration on physico-chemical properties of the soil under *Bt* cotton (*Gossypium hirsutum* L.) cultivation

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Abstract: A field experiment was conducted to know the effect of land configurations and spot application of organic manures on soil properties of Alfisols under *Bt* cotton crop carried at College of Agriculture, Hanumanamatti, Karnataka during kharif 2019-20. The experiment was laid out in split plot design with two main plot treatments, ridge and furrow method of sowing (M_1) and flat bed method of sowing (M_2) with six sub plot treatments (S_1 : RDF-Control, S_2 : RPP-Package of practice, S_3 : S_1 + Blanket application FYM @ 5 t ha^{-1} , S_4 : S_1 + Spot application FYM @ 5 t ha^{-1} , S_5 : S_1 + Blanket application vermicompost @ 2.5 t ha^{-1} , S_6 : S_1 + Spot application vermicompost @ 2.5 t ha^{-1}) replicated thrice. Soil samples collected after crop harvest and were analyzed for physical and chemical properties. The plant samples were analyzed for nutrients concentration after harvest of the crop then nutrient uptake was calculated. The results revealed that plants grown under ridge and furrow method (M_1) of sowing had significantly higher growth and growth attributes, yield and yield attributes, nutrient uptake and soil nutrient status after harvest of crop. Sub-plot treatment, (S_6) RDF+ spot application vermicompost @ 2.5 t ha^{-1} recorded significantly higher values for growth and growth attributes, yield and yield attributes.. Among different treatment interactions ($M_1 \times S_6$), plots supplied with RDF+ Spot application of vermicompost @ 2.5 t ha^{-1} (S_6) under ridge and furrow method of sowing (M_1) found to be effective over other treatment combinations in the above mentioned parameters. Hence, spot application of vermicompost with full dose of chemical fertilizers under ridge and furrow method of sowing is possible to get better yield and improved soil physical conditions as well as nutrient status.

Key Words: *Bt* cotton, Potassium release, Potassium fixation, Spot application, Land configuration, Alfisol.

INTRODUCTION:

Cotton, one of the important fiber cum cash crop, plays vital role in history and civilization of mankind ever since with enormous potential in textile industries and means of livelihood for millions of farmers and those concerned with its trade, processing, manufacturing and other allied industries. Its cultivation being confined mainly to areas lying between longitudes 70° and 80° . The enormous cotton tract in India occupies central, southern and northern zones of the country. Cotton seed contains 15-20% oil and is used in vegetable oil and soap industries. After extraction of oil left over cake is protein rich and used as cattle feed. It is the king of fiber crops, taking into consideration the economic impact it generate. Besides its vital role in national economy, its contribution in the foreign exchange is tremendous. Still there exists large potential for export of raw cotton and value added products. India ranks first in world and Maharashtra state ranks first in country as to acreage under *Bt* cotton crop concerned. However, the productivity of *Bt* cotton in our country is $501 \text{ kg lint ha}^{-1}$ and Maharashtra state is $341 \text{ kg lint ha}^{-1}$ which is low as compared to national average. Within Maharashtra state Marathwada is main cotton growing region of Maharashtra. In Marathwada *Bt* cotton grown predominantly as a rainfed crop. (Anon, 2010). In Karnataka *Bt* cotton occupies an area about 5.75 lakh hectares with the production of 18 lakh bales and productivity $532 \text{ kg lint ha}^{-1}$ (Anon, 2019). The principle behind the practice of ridge and furrow method of planting over flat bed method of planting is to increase the rate of infiltration by reducing the rate of runoff, temporally impounding the water on the surface of soil to increase the infiltration by reducing the surface of soil to increase opportunity time for infiltration. Adoption of moisture conservation practices for local situations helps to improve the soil moisture availability and thereby to achieve higher crop yield to improve quality parameters of *Bt* cotton. Integrated nutrient management system is such an approach through which the management of plant nutrition and soil fertility in farming system is explored to take organic



sources as well as chemical fertilizers to combat the environmental hazards and combination of organic and inorganic material will be beneficial to increase crop yield, soil health and sustainable productivity. The mixed applications are not only complementary but synergistic as well since organic inputs have beneficial effects beyond their nutritional contents. Spot application/Banding refers to placing nutrients/manures on one side, or on both sides of the seed or seedlings at planting. Banding fertilizer/ results in improving nutrient availability near the banded site for a longer period of time than broadcasting. Generally, research results have shown under such conditions that only one-half to two-thirds as much fertilizer is required when banded as compared to broadcast. Banding becomes more efficient with more widely spaced rows. (Mahler, 2001).

MATERIAL AND METHODS:

Location of the experimental site:

The experiment was conducted at research farm of College of Agriculture, Hanumanamatti, Ranebennur, Haveri district, which is situated in the Northern Transition Zone (Agro climatic Zone-8) of Karnataka state and located at latitude 14.39' N, longitude 75°33' E and at an altitude of 594.36 m above mean sea level (MSL). The Northern transition zone is situated between Northern dry zone (Zone 3) and Hilly zone (Zone 9) of Karnataka.

Soil and its characteristics:

The experimental site consisted of red sandy loam soil. Composite soil samples from experimental sites were collected from 0 to 30 cm depth prior to start of the experiment on 2nd fortnight of June 2019. Soil samples were air dried, powdered and sieved through sieve and were analyzed for physical and chemical properties by following standard procedures. Soils of the experimental site were neutral in reaction and the fertility status of soils differed with nutrients. The experiment was laid out in Split Plot Design with three replications with the following specifications.

Main Crop	:	<i>Bt</i> cotton
Hybrid	:	First class BG-II
Situation	:	Irrigated
Design of Experiment	:	Split plot
Replications	:	3
Main plot treatments	:	2
Sub plot treatments	:	6
Main plot area	:	174.96 m ²
Sub plot area	:	29.16 m ²
Treatments combinations	:	2x6=12
Gross plot size	:	5.4 m x 5.4m
Net plot size	:	3.6m x 4.2 m
Spacing	:	90 cm x 60 cm
Sowing season	:	<i>Kharif</i> 2019
Date of sowing	:	2 nd July 2019

Treatment details:

Main plot

M₁: Ridge and furrow method of sowing

M₂: Flat bed method of sowing

Sub plots

S₁: RDF only (Chemical fertilizers)

S₂: RPP (Package of Practice)

S₃: S₁ + Blanket application FYM @ 5t ha⁻¹

S₄: S₁ + Spot application FYM @ 5t ha⁻¹

S₅: S₁ + Blanket application Vermicompost @ 2.5t ha⁻¹

S₆: S₁ + Spot application Vermicompost @ 2.5t ha⁻¹

NOTE: *RPP: FYM@10 t ha⁻¹ + 180: 90: 90 kg of N: P₂O₅: K₂O ha⁻¹ respectively.

RDF: 180: 90: 90 kg of N: P₂O₅: K₂O ha⁻¹ respectively.

All the treatments received 100 % recommended dose of nitrogen, phosphorous and potassium for *Bt* cotton, along with varied levels of organic manures from different sources. Farm Yard Manure (FYM) was applied @ 5t ha⁻¹ to two different land configuration methods by two different method of application. Vermicompost was applied @ 2.5t ha⁻¹ to two different land configuration methods by two different method of application.



Seeds and sowing:

The First class BG-II hybrid *Bt* cotton (developed and released from BAYER Crop Science Pvt. Ltd) seeds were dibbled as per the recommended spacing on 2nd July 2019. Two seeds per hill were dibbled to a depth of 5 cm following a spacing of 90cm in between rows and 60cm in between plants.

Manures and fertilizer application:

Nitrogen, phosphorus and potassium were applied in the form of urea, DAP and muriate of potash respectively, part of nitrogen was applied through urea and DAP while the entire dose of P was applied through DAP. Fertilizer dosage of 180: 90: 90 kg N : P₂O₅ : K₂O ha⁻¹ respectively+ FYM@ 10 t ha⁻¹ was used as per the recommended dose of fertilizer (RDF), The organic manure doses as per different treatments were calculated based on the gross plot size. Nitrogen was applied in three splits. Entire dose of (100 per cent) P₂O₅ and K₂O and 50 per cent of nitrogen were applied as basal fertilizer at the time of sowing. Basal doses of fertilizers were applied five centimeter away and deep from the seed by ring method. Remaining 50 per cent nitrogen was applied at 30 and 60 days after sowing (DAS).

RESULTS AND DISCUSSION:

Influence of land configuration practices and application of varied levels and modes of organic manures on soil fertility status after harvest of *Bt* cotton

The physical parameters of soil viz., bulk density, porosity and maximum water holding capacity of soil as influenced by different land configurations, varied levels and modes of organic manures application are presented in Table 1.

Bulk density:

The two different land configurations did not influenced significantly on bulk density of soil after harvest of *Bt* cotton in both ridge and furrow method (M₁) and flat bed method (M₂) of sowing recorded similar values (1.30 Mg m⁻³). Application of different levels and doses of organic manures also not influenced significantly but slightly improved values for bulk density (1.29 Mg m⁻³) as noticed in RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S₆). Similarly different treatment interactions also did not influenced significantly but slightly improved values for bulk density (1.29 Mg m⁻³) was recorded in (M₁S₆), ridge and furrow method (M₁) of sowing combined with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S₆).

Porosity (%):

The two different land configuration treatments did not influenced significantly on porosity of soil after harvest of *Bt* cotton and slightly improved values are obtained (50.90 %) in ridge and furrow method (M₁) compared to flat bed method (M₂) of sowing. Application of different levels and doses of organic manures also did not influenced significantly but slightly improved values for porosity (51.13 %) are noticed in RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S₆). Similarly, different treatment interactions also did not influenced significantly but slightly improved values for porosity (51.19 %) was recorded in (M₁S₆), ridge and furrow method (M₁) of sowing combined with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S₆).

Maximum water holding capacity (MWHC) (%):

The two different land configurations did not influenced significantly on maximum water holding capacity of soil after harvest of *Bt* cotton and slightly improved values are obtained (30.38 %) in ridge and furrow method (M₁) compared to flat bed method (M₂) of sowing. Application of different levels and doses of organic manures also did not influenced significantly but slightly improved values for maximum water holding capacity (38.51 %) are noticed in RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S₆). Similarly different treatment interactions also did not influenced significantly but slightly improved values for porosity (38.51 %) as recorded in (M₁S₆), ridge and furrow method (M₁) of sowing combined with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S₆). Main plot treatments such as ridge and furrow method of sowing and flat bed method of sowing has no effect on major physical properties of soil such as bulk density, porosity and maximum water holding capacity of soil this might be due to the fact that physical properties of soil mainly depends on soil type present in site, clay mineralogy and primary soil fractions present in site and these results are similar to findings of Jaware (2012).

A slight improvement in bulk density of soil (1.29 Mg m⁻³) after harvest of cotton in the sub plot supplied with RDF + spot application of vermicompost @ 2.5 t ha⁻¹ (S₆) was noticed over (1.31 Mg m⁻³) sub plot supplied with RDF only (S₁). This may be due to addition of vermicompost which upon decomposition helped the process of soil aggregation and thus increased the porosity of soil and hence decreased bulk density. Similar results were also justified by Mishra and Sharma (1997). The maximum water holding capacity of a soil is directly related to its porosity and indirectly related to bulk density. In the present study, the plot which received FYM or vermicompost



and their combination with inorganic fertilizers had comparatively higher values of maximum water holding capacity. The increase in non-capillary pore space of the soil brought about by favourable interaction between clay and humus might have led to overall increase in moisture holding capacity of soil (Kavallappa, 1989 and Kalane *et al.*, 1995).

Chemical properties of soil (0-15cm) after harvest of Bt cotton:

The data on soil chemical properties analyzed after harvesting of crop namely organic carbon, pH, and EC as influenced by different land configuration treatments and varied levels and modes of different organic manures application are presented in Table 2 and results are presented below.

Soil pH:

The two different land configuration treatments did not influenced significantly on pH of soil after harvest of Bt cotton and slightly higher values are obtained (6.61) in ridge and furrow method (M_1) compared to flat bed method (M_2) of sowing. Application of different levels and doses of organic manures influenced slightly and little improved values for pH (6.68) are noticed in RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S_6). Similarly different treatment interactions also did not influenced significantly but slightly improved values for pH (6.68) was recorded in (M_1S_6), ridge and furrow method (M_1) of sowing combined with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S_6).

Electrical conductivity (EC):

The two different land configuration treatments did not influenced significantly on EC of soil after harvest of Bt cotton and slightly improved values were obtained (0.28 dS m⁻¹) in ridge and furrow method (M_1) compared to flat bed method (M_2) of sowing. Application of different levels and doses of organic manures influenced significantly and higher values for EC (0.32 dS m⁻¹) are noticed in RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S_6). Similarly different treatment interactions also did not influenced significantly but slightly higher values for EC (0.33 dS m⁻¹) was recorded in (M_1S_6), ridge and furrow method (M_1) of sowing combined with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S_6).

Organic Carbon (OC):

The two different land configurations did not influenced significantly on organic carbon of soil after harvest of Bt cotton and slightly improved values are obtained (4.50 g kg⁻¹) in ridge and furrow method (M_1) compared to flat bed method (M_2) of sowing. Application of different levels and doses of organic manures influenced significantly and higher values for organic carbon (5.30 g kg⁻¹) are noticed in RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S_6). Similarly different treatment interactions also did not influenced significantly but slightly higher values for organic carbon (5.30 g kg⁻¹) was recorded in (M_1S_6), ridge and furrow method (M_1) of sowing combined with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S_6) and (M_1S_6) and (M_2S_6), flat bed method method (M_2) of sowing combined with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S_6). Main plot treatments such as ridge and furrow method of sowing and flat bed method of sowing has no effect on major physical properties of soil such as pH, EC and organic carbon. The raise in soil pH under sub plot treatment (S_6) supplied with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ might due to the deactivation of Fe²⁺ and Al³⁺ by the chelating agents and concomitant release of basic cations upon its decomposition (Lal and Mathur 1989). The reason for relatively higher soluble salt contents observed in the sub plot treatment (S_6) as compared to the sub plots treated with only chemical fertilizers (S_1) could be attributed to the release of basic cations from the vermicompost and subsequent formation of some of the soluble salts of those ions. The present study was in conformity with the results of Nasir (2010). Higher amount of organic carbon in sub plots treated with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S_6), is mainly due to the addition of organic manures that increased the soil organic carbon status and this results are in corroboration with Leena *et al.* (2017).

Available major nutrient status of soil (0-15cm) after harvest of Bt cotton:

Nitrogen (kg ha⁻¹)

The data on soil available nitrogen recorded after harvest as influenced by different land configurations and varied levels and modes of different organic manures application are presented in Table 3 and Fig 1.

Between two different land configuration treatments soils under ridge and furrow method (M_1) of sowing had tested significantly higher nitrogen content (291.41 kg ha⁻¹) over soils tested under flat bed method (M_2) of sowing in which lowest amount of nitrogen content (288.57 kg ha⁻¹) was recorded. The data related to different organic manure applications at various doses and modes, RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S_6) had tested significantly higher available nitrogen content (296.39 kg ha⁻¹) and is on par with sub plot treatments which received, RDF+ spot application of FYM @ 2.5 t ha⁻¹ (S_4), RDF+ blanket application of vermicompost @ 2.5 t ha⁻¹ (S_4), RPP (S_2). Significantly, lowest nitrogen content (281.66 kg ha⁻¹) was tested in soils applied with RDF only (S_1). Among the different treatment interactions, (M_1S_6) soils under ridge and furrow method (M_1) of sowing combined with RDF+



spot application of vermicompost @ 2.5 t ha⁻¹ (S₆) had tested higher nitrogen content (298.39 kg ha⁻¹) as compared to other treatment combinations. Significantly, lowest nitrogen content was tested in (M₂S₁), soils applied with RDF only (S₁) under flat bed method (M₂) of sowing (280.26 kg ha⁻¹).

Available Phosphorus (kg ha⁻¹):

The data on soil available phosphorus recorded after harvest as influenced by different land configurations and varied levels of different organic manures application are presented in Table 3 and Fig 2. The ridge and furrow method (M₁) of sowing had tested significantly higher phosphorous content (31.70 kg ha⁻¹) over soils tested under flat bed method (M₂) of sowing in which lowest amount of phosphorus content (31.05 kg ha⁻¹) was recorded. The data also showed that soils under RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S₆) had tested significantly higher phosphorus content (33.89 kg ha⁻¹) and is on par with sub plot treatments which received, RDF+ spot application of FYM @ 2.5 t ha⁻¹ (S₄), RDF+ blanket application of vermicompost @ 2.5 t ha⁻¹ (S₄), RPP (S₂). Lowest phosphorus content (28.84 kg ha⁻¹) was tested in soils supplied with RDF only (S₁). Among the different combinations of main plot and sub plot treatments, soils under ridge and furrow method (M₁) of sowing combined with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S₆) had tested higher (M₁S₆) phosphorous content (34.36 kg ha⁻¹) as compared to other treatment combinations. Significantly lowest phosphorous content was tested in (M₂S₁), soils applied with RDF only (S₁) under flat bed method (M₂) of sowing (28.74 kg ha⁻¹).

Available Potassium (kg ha⁻¹):

The data on soil available potassium recorded at after harvest as influenced by different land configuration treatments and varied levels of different organic manure application are presented in Table 3 and Fig 3. Between two different land configuration treatments on soil available potassium ridge and furrow method (M₁) of sowing had tested significantly higher potassium content (216.89 kg ha⁻¹) over soils tested under flat bed method (M₂) of sowing in which significantly lowest amount of potassium content (214.94 kg ha⁻¹) was recorded. Soils applied with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S₆) had tested significantly higher potassium content (222.00 kg ha⁻¹) and is on par with sub plot treatments which received, RDF+ spot application of FYM @ 2.5 t ha⁻¹ (S₄), RDF+ blanket application of vermicompost @ 2.5 t ha⁻¹ (S₄), RPP (S₂). Significantly lowest potassium content (207.40 kg ha⁻¹) was tested in soils applied with RDF only (S₁). Among the different treatment combinations, soils under (M₁S₆), ridge and furrow method (M₁) of sowing combined with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S₆) had tested higher potassium content (222.93 kg ha⁻¹) as compared to other treatment combinations. Lowest potassium content was tested in (M₂S₁), soils applied with RDF only (S₁) under flat bed method (M₂) of sowing (206.60 kg ha⁻¹). Higher amount of available nitrogen, phosphorus and potassium were noticed in soils under ridge and furrow method of sowing (M₁) and this might be due to higher moisture conservation in ridge and furrow method of sowing, the results were in confirmation with Katkar *et al.* (2002) and Singh *et al.* (2004). Significant increase in soil nitrogen status (296.39 kg ha⁻¹) was observed in sub plot treatment (S₆) supplied with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (Fig.2) this could be ascribed to the increased organic matter content due to combined application of organic and inorganic fertilizers (Basumantary and Talukdar, 1998) over sub plot treatment (S₁) supplied with only RDF (281.66 kg ha⁻¹) and initial nitrogen status of soil (265.64 kg ha⁻¹). Spot application of manures has recorded higher soil nitrogen after the harvest of *Bt* cotton that might be due the significant reduction in the loss of nitrogen in the form of ammonia emissions and the results were similar to the findings of Kassik (1996) and Dijk and Brouwer. (1998). The available phosphorus content of soil showed significant variation with different sub plot treatments in the present field experiment. The available phosphorus content (Fig.3) was observed more in sub plot treatment (S₆) supplied with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ and is due to the addition of vermicompost along with inorganic fertilizer. Phosphorus in this organic manure contributed to the available P pool of soil upon their mineralization (Badanur *et al.*, 1990). But the soils treated only RDF (S₁) there is a significant reduction of available phosphorus (28.84 kg ha⁻¹) content because removal of labile phosphorus by the crops in a soil not nourished by the addition of phosphorus from external sources. Spot application of manures has recorded higher soil phosphorus and potassium after the harvest of *Bt* cotton that might be due the higher release of native soil phosphorus and potassium as spot application has reduced the loss of nutrients. Vermicompost is not only a direct but also a ready source of potassium and also aids in minimizing the leaching loss of potassium by retaining potassium ions on exchange sites of its decomposed products (Bansal and Sekon 1992). Highest amount of available potassium (Fig.3) was noticed in sub plot treatment (S₆) which received RDF+ spot application of vermicompost @ 2.5 t ha⁻¹, this might be due to the application of potassium fertilizer through chemical source and vermicompost. The vermicompost act as a reservoir of potassium and favoured continuous release of potassium during decomposition increased the soil available potassium content significantly. Similar findings were also reported by Khera and Minhas (1991).



Available major nutrient status of soil (0-15cm) after harvest of Bt cotton:

Exchangeable Calcium (c mol (p+) kg⁻¹)

The data on soil exchangeable calcium recorded after harvest of the crop as influenced by different land configuration treatments and application of varied levels and modes of organic manures are presented in Table 4 and Fig 4. Among two different land configurations soils under ridge and furrow method (M_1) of sowing had tested significantly higher exchangeable calcium content (3.63 c mol (p+) kg⁻¹) over soils tested under flat bed method (M_2) of sowing in which significantly lowest amount of exchangeable calcium (3.48 c mol (p+) kg⁻¹) was noticed. The data related to the application of different organic manures at different doses and levels indicated that soils supplied with RDF only (S_1) recorded significantly higher amount of exchangeable calcium (4.17 c mol (p+) kg⁻¹). Significantly, lowest exchangeable calcium content (2.88 c mol (p+) kg⁻¹) was tested in soils applied RDF+ spot application of vermicompost (S_6). Among the different treatment interactions, (M_2S_6) soils under flat bed method (M_2) of sowing combined with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S_6) had tested lower exchangeable calcium content (2.84 c mol (p+) kg⁻¹) as compared to other treatment combinations. Significantly, highest exchangeable calcium content was noticed in (M_1S_1), soils applied with RDF only (S_1) with ridge and furrow method (M_1) of sowing (4.23 c mol (p+) kg⁻¹).

Exchangeable Magnesium (c mol (p+) kg⁻¹):

The data on soil exchangeable magnesium recorded after harvest of the crop as influenced by different land configurations and varied levels of different organic manure application are presented in Table 4 and Fig 4. Out of two land configurations soils under ridge and furrow method (M_1) of sowing had tested significantly higher exchangeable magnesium content (2.52 c mol (p+) kg⁻¹) over soils tested under flat bed method (M_2) of sowing in which significantly lowest exchangeable magnesium (2.44 c mol (p+) kg⁻¹) was recorded. Soils supplied with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S_6) had tested significantly lower exchangeable magnesium content (2.14 c mol (p+) kg⁻¹) over other sub plot treatments. Significantly, highest exchangeable magnesium content (2.86 c mol (p+) kg⁻¹) was tested in soils supplied with RDF only (S_1). Among the different combinations of main plot and sub plot treatments, (M_2S_6) soils under flat bed method (M_2) of sowing combined with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S_6) had tested lower exchangeable magnesium content (2.11 c mol (p+) kg⁻¹) as compared to other treatment combinations. Highest exchangeable magnesium content was tested in (M_1S_1), soils applied with RDF only (S_1) under ridge and furrow method (M_1) of sowing (2.92 c mol (p+) kg⁻¹).

Available Sulphur (kg ha⁻¹):

The data on soil available sulphur recorded at after harvest as influenced by different land configuration treatments and varied levels and modes of different organic manure application are presented in Table 4. The data related to the main plot treatments indicated that soils tested under ridge and furrow method (M_1) of sowing had noticed significantly higher available sulphur content (22.45 kg ha⁻¹) over soils tested under flat bed method (M_2) of sowing in which significantly lowest available sulphur content (21.28 kg ha⁻¹) was recorded. Application of different organic manures at various modes and levels, soils applied with RDF only (S_1) recorded significantly highest sulphur content (27.86 kg ha⁻¹) compared to other sub plot treatments. However, soils tested under RDF+ spot application vermicompost @ 2.5 t ha⁻¹ (S_6) having sulphur content of (16.98 kg ha⁻¹) has significantly lowest value. The treatment interactions clearly indicated (M_2S_6) soils under flat bed method (M_2) of sowing combined with RDF+ spot application of vermicompost @ 2.5 t ha⁻¹ (S_6) had tested lower sulphur content (16.61 kg ha⁻¹) as compared to other treatment combinations. Significantly, highest sulphur content was tested in (M_1S_1), soils applied with RDF only (S_1) under ridge and furrow method (M_1) of sowing (28.21 kg ha⁻¹). Higher amount of available sulphur (Fig.18), exchangeable calcium and magnesium were noticed in soils under ridge and furrow method of sowing (M_1) and this might be due to higher moisture conservation in ridge and furrow method of sowing, the results were in confirmation with Singh *et al.* (2004) and Katkar *et al.* (2002). The results indicated that higher amount of exchangeable calcium and magnesium was noticed (Fig.19) in sub plot treatment (S_1) which received RDF only, this might be due to uptake of calcium and magnesium was low in sub plot (S_1). On the other hand higher amount of available potassium in (S_6) leads to antagonistic effect on uptake of calcium and magnesium and similar results were noticed by Svend (2009). Donald (1998) also revealed that application of K or Ca or Mg results in lower concentrations of remaining two cations irrespective of crop grown.

CONCLUSIONS:

Effect of land configuration:

The soil physical properties such as bulk density (Mg m⁻³), porosity (%) and maximum water holding capacity (%) and chemical properties such as soil pH, EC (dS m⁻¹) and organic carbon (g kg⁻¹) were not influenced significantly by any land configurations. The soil nutrient status after harvest of *Bt* cotton was significantly influenced by land



configurations. The ridge and furrow method of sowing recorded significantly higher amount of nitrogen (kg ha^{-1}), phosphorus (kg ha^{-1}), potassium (kg ha^{-1}), sulphur (kg ha^{-1}), calcium ($\text{c mol (p+) kg}^{-1}$) and magnesium ($\text{c mol (p+) kg}^{-1}$).

Effect of spot application of organic manures:

Physical properties of soil such as bulk density (Mg m^{-3}), porosity (%) and maximum water holding capacity (%) were not influenced significantly due to mode of manure application. Whereas, chemical properties such as soil pH, EC (dS m^{-1}) and organic carbon (g kg^{-1}) were influenced significantly by spot application of organic manures. The available nutrient status of soil after the harvest of *Bt* cotton for nitrogen, phosphorus, potassium, sulphur, calcium and magnesium were significantly influenced by mode of manure application. Significantly higher amount of nitrogen (kg ha^{-1}), phosphorus (kg ha^{-1}), potassium (kg ha^{-1}), sulphur (kg ha^{-1}), calcium ($\text{c mol (p+) kg}^{-1}$) and magnesium ($\text{c mol (p+) kg}^{-1}$) were registered for spot application of vermicompost.

Interaction effect of main plot and sub plot treatments:

The soil nutrient status with respect physical and chemical properties had positive and significant interaction with respect to bulk density (Mg m^{-3}), porosity (%) and maximum water holding capacity (%), soil pH, EC (dS m^{-1}) and organic carbon (g kg^{-1}) with treatment combination $M_1 \times S_6$, plants grown under ridge and furrow method of planting (M_1) and supplied with RDF+ spot application of vermicompost @ 2.5 t ha^{-1} (S_6). The soil available nutrients; nitrogen, phosphorus, potassium, sulphur, calcium and magnesium were significantly influenced by the same treatment combination having ridge and furrow method and spot application of organic manure.

ACKNOWLEDGEMENT:

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Table 1: Physical properties of soil (0-15cm) after harvest of *Bt* cotton as influenced by land configuration practices and application of organic manures

Treatments	Bulk density (Mg m ⁻³)	Porosity (%)	MWHC(%)
M ₁	1.30	50.90	38.38
M ₂	1.30	50.94	38.40
S. Em ±	0.01	0.02	0.01
C.D. (P=0.05)	NS	NS	NS
Sub plots:			
S ₁	1.31	50.75	38.21
S ₂	1.32	50.25	38.21
S ₃	1.30	51.07	38.43
S ₄	1.30	51.13	38.49
S ₅	1.29	51.19	38.49
S ₆	1.29	51.13	38.51
S. Em ±	0.03	0.13	0.02
C.D. (P=0.05)	NS	NS	NS
Interaction (M×S):			
M ₁ ×S ₁	1.31	50.69	38.22
M ₁ ×S ₂	1.32	50.19	38.22
M ₁ ×S ₃	1.30	51.07	38.37
M ₁ ×S ₄	1.30	51.07	38.49
M ₁ ×S ₅	1.29	51.19	38.49
M ₁ ×S ₆	1.29	51.19	38.51
M ₂ ×S ₁	1.30	50.82	38.20
M ₂ ×S ₂	1.32	50.31	38.20
M ₂ ×S ₃	1.30	51.07	38.48
M ₂ ×S ₄	1.29	51.19	38.48
M ₂ ×S ₅	1.29	51.19	38.50
M ₂ ×S ₆	1.30	51.07	38.51
S. Em ±	0.04	0.16	0.03
C.D. (P=0.05)	NS	NS	NS
Initial values	1.34	49.31	33.28

M₁ : Ridge and furrow method of planting

M₂ : Flatbed method of planting

S₁: RDF only (Chemical fertilizers)

S₂: RPP (Package of practice)

S₃ : S₁+Blanket application FYM @ 5t ha⁻¹

S₄: S₁+Spot application FYM @ 5t ha⁻¹

RPP: FYM @ 10 t ha⁻¹+ 180: 90: 90 kg of N P₂O₅ K₂O ha⁻¹

RDF: 180: 90: 90 kg of N P₂O₅ K₂O ha⁻¹

S₅: S₁+Blanket application Vermicompost @ 2.5t ha⁻¹

S₆: S₁+ Spot application Vermicompost @ 2.5t ha⁻¹



Table 2: Chemical properties of soil (0-15cm) after harvest of *Bt* cotton as influenced by land configuration practices and application of organic manures:

Treatments	Soil pH (1:2.5 : soil: water suspension)	Electrical conductivity (1:2.5 soil water extract) (dS m ⁻¹)	Organic carbon (g kg ⁻¹)
M ₁	6.61	0.28	4.50
M ₂	6.59	0.25	4.40
S. Em ±	0.02	0.01	0.03
C.D. (P=0.05)	NS	NS	NS
Sub plots:			
S ₁	6.51	0.20	3.60
S ₂	6.60	0.26	4.40
S ₃	6.57	0.23	3.80
S ₄	6.64	0.30	4.90
S ₅	6.60	0.28	4.60
S ₆	6.68	0.32	5.30
S. Em ±	0.02	0.02	0.31
C.D. (P=0.05)	0.06	0.06	0.94
Interaction (M×S):			
M ₁ ×S ₁	6.52	0.21	3.70
M ₁ ×S ₂	6.61	0.27	4.40
M ₁ ×S ₃	6.58	0.24	3.80
M ₁ ×S ₄	6.64	0.31	4.90
M ₁ ×S ₅	6.61	0.29	4.60
M ₁ ×S ₆	6.68	0.33	5.30
M ₂ ×S ₁	6.50	0.19	3.50
M ₂ ×S ₂	6.59	0.24	4.30
M ₂ ×S ₃	6.55	0.22	3.70
M ₂ ×S ₄	6.63	0.29	4.90
M ₂ ×S ₅	6.59	0.27	4.60
M ₂ ×S ₆	6.68	0.31	5.30
S. Em ±	0.003	0.014	0.01
C.D. (P=0.05)	NS	NS	NS
Initial values	6.70	0.32	4.10

M₁ : Ridge and furrow method of planting

M₂ : Flatbed method of planting

S₁: RDF only (Chemical fertilizers)

S₂: RPP (Package of practice)

S₃ : S₁+Blanket application FYM @ 5t ha⁻¹

S₄: S₁+Spot application FYM @ 5t ha⁻¹

RPP: FYM @ 10 t ha⁻¹+ 180: 90: 90 kg of N P₂O₅ K₂O ha⁻¹

RDF: 180: 90: 90 kg of N P₂O₅ K₂O ha⁻¹

S₅ : S₁+Blanket application Vermicompost @ 2.5t ha⁻¹

S₆: S₁+ Spot application Vermicompost @ 2.5t ha⁻¹



Table 3: Available nutrient status of soil (0-15cm) after harvest of *Bt* cotton as influenced by land configuration practices and application of organic manures

Treatments	Available nutrient status of soil (kg ha ⁻¹)		
	N	P ₂ O ₅	K ₂ O
M ₁	291.41	31.70	216.89
M ₂	288.57	31.05	214.94
S. Em ±	0.89	0.20	0.62
C.D. (P=0.05)	2.78	0.62	1.90
Sub plots:			
S ₁	281.66	28.84	207.40
S ₂	290.06	30.66	216.51
S ₃	285.56	29.73	210.27
S ₄	294.11	32.94	220.52
S ₅	292.16	32.16	218.81
S ₆	296.39	33.89	222.00
S. Em ±	2.27	1.24	2.23
C.D. (P=0.05)	6.84	3.76	6.73
Interaction (M×S):			
M ₁ ×S ₁	283.06	28.94	208.20
M ₁ ×S ₂	291.61	30.94	217.28
M ₁ ×S ₃	285.99	30.08	211.42
M ₁ ×S ₄	295.63	33.48	221.80
M ₁ ×S ₅	293.80	32.36	219.72
M ₁ ×S ₆	298.39	34.36	222.93
M ₂ ×S ₁	280.26	28.74	206.60
M ₂ ×S ₂	288.50	30.38	215.74
M ₂ ×S ₃	285.13	29.38	209.11
M ₂ ×S ₄	292.59	32.40	219.95
M ₂ ×S ₅	290.57	31.96	217.91
M ₂ ×S ₆	294.39	33.41	221.06
S. Em ±	3.23	1.29	2.32
C.D. (P=0.05)	9.73	3.94	7.02
Initial values	245.52	42.38	183.61

M₁ : Ridge and furrow method of planting RPP: FYM @ 10 t ha⁻¹+ 180: 90: 90 kg of N P₂O₅ K₂O ha⁻¹
 M₂ : Flatbed method of planting RDF: 180: 90: 90 kg of N P₂O₅ K₂O ha⁻¹
 S₁: RDF only (Chemical fertilizers) S₅ : S₁+Blanket application Vermicompost @ 2.5t ha⁻¹
 S₂: RPP (Package of practice) S₆: S₁+ Spot application Vermicompost @ 2.5t ha⁻¹
 S₃ : S₁+Blanket application FYM @ 5t ha⁻¹
 S₄: S₁+Spot application FYM @ 5t ha⁻¹

Table 4: Secondary nutrient status of soil (0-15cm) after harvest of *Bt* cotton as influenced by land configuration practices and application of organic manures

Treatments	Sulphur (kg ha ⁻¹)	Exchangeable calcium (c mol (p+) kg ⁻¹)	Exchangeable magnesium (c mol (p+) kg ⁻¹)
M ₁	22.45	3.63	2.52
M ₂	21.28	3.48	2.44
S. Em ±	0.36	0.04	0.02
C.D. (P=0.05)	1.13	0.13	0.06
Sub plots:			
S ₁	27.86	4.17	2.86
S ₂	24.49	3.74	2.56



S ₃	25.55	3.98	2.71
S ₄	17.54	3.19	2.22
S ₅	18.78	3.37	2.40
S ₆	16.98	2.88	2.14
S. Em ±	3.23	0.25	0.17
C.D. (P=0.05)	9.76	0.78	0.56
Interaction (M×S):			
M ₁ ×S ₁	28.21	4.23	2.92
M ₁ ×S ₂	24.78	3.85	2.59
M ₁ ×S ₃	26.29	4.05	2.74
M ₁ ×S ₄	18.21	3.25	2.27
M ₁ ×S ₅	19.89	3.50	2.45
M ₁ ×S ₆	17.34	2.92	2.17
M ₂ ×S ₁	27.51	4.10	2.81
M ₂ ×S ₂	24.21	3.64	2.52
M ₂ ×S ₃	24.81	3.91	2.67
M ₂ ×S ₄	16.87	3.13	2.18
M ₂ ×S ₅	17.66	3.24	2.35
M ₂ ×S ₆	16.61	2.84	2.11
S. Em ±	3.05	0.20	0.88
C.D. (P=0.05)	9.24	0.59	2.69
Initial	28.22	3.04	1.92

M₁ : Ridge and furrow method of planting

M₂ : Flatbed method of planting

S₁: RDF only (Chemical fertilizers)

S₂: RPP (Package of practice)

S₃ : S₁+Blanket application FYM @ 5t ha⁻¹

S₄ : S₁+Spot application FYM @ 5t ha⁻¹

RPP: FYM @ 10 t ha⁻¹+ 180: 90: 90 kg of N P₂O₅ K₂O ha⁻¹

RDF: 180: 90: 90 kg of N P₂O₅ K₂O ha⁻¹

S₅ : S₁+Blanket application Vermicompost @ 2.5t ha⁻¹

S₆ : S₁+ Spot application Vermicompost @ 2.5t ha⁻¹

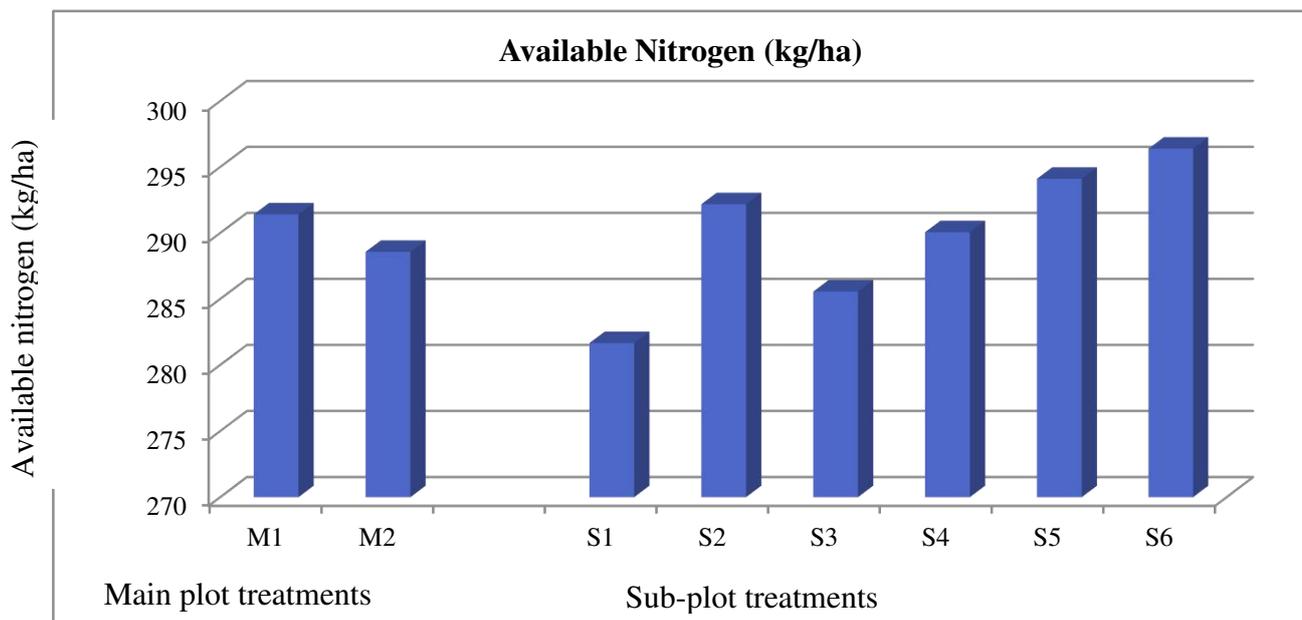




Figure 1: Available nitrogen status of soil (0-15cm) after harvest of *Bt* cotton as influenced by land configuration practices and spot application of organic manures

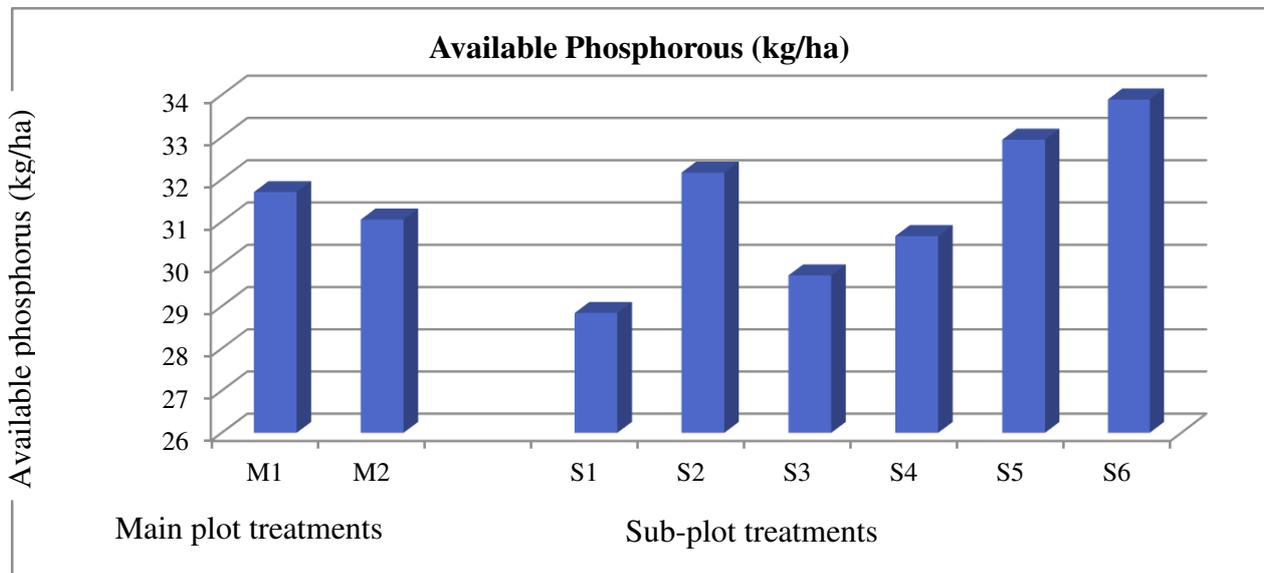


Figure 2: Available phosphorus status of soil (0-15cm) after harvest of *Bt* cotton as influenced by land configuration practices and spot application of organic manures

M ₁ : Ridge and furrow method of planting	RPP: FYM @ 10 t ha ⁻¹ + 180: 90: 90 kg of N P ₂ O ₅ K ₂ O ha ⁻¹
M ₂ : Flatbed method of planting	RDF: 180: 90: 90 kg of N P ₂ O ₅ K ₂ O ha ⁻¹
S ₁ : RDF only (Chemical fertilizers)	S ₅ : S ₁ +Blanket application Vermicompost @ 2.5t ha ⁻¹
S ₂ : RPP (Package of practice)	S ₆ : S ₁ + Spot application Vermicompost @ 2.5t ha ⁻¹
S ₃ : S ₁ +Blanket application FYM @ 5t ha ⁻¹	
S ₄ : S ₁ +Spot application FYM @ 5t ha ⁻¹	

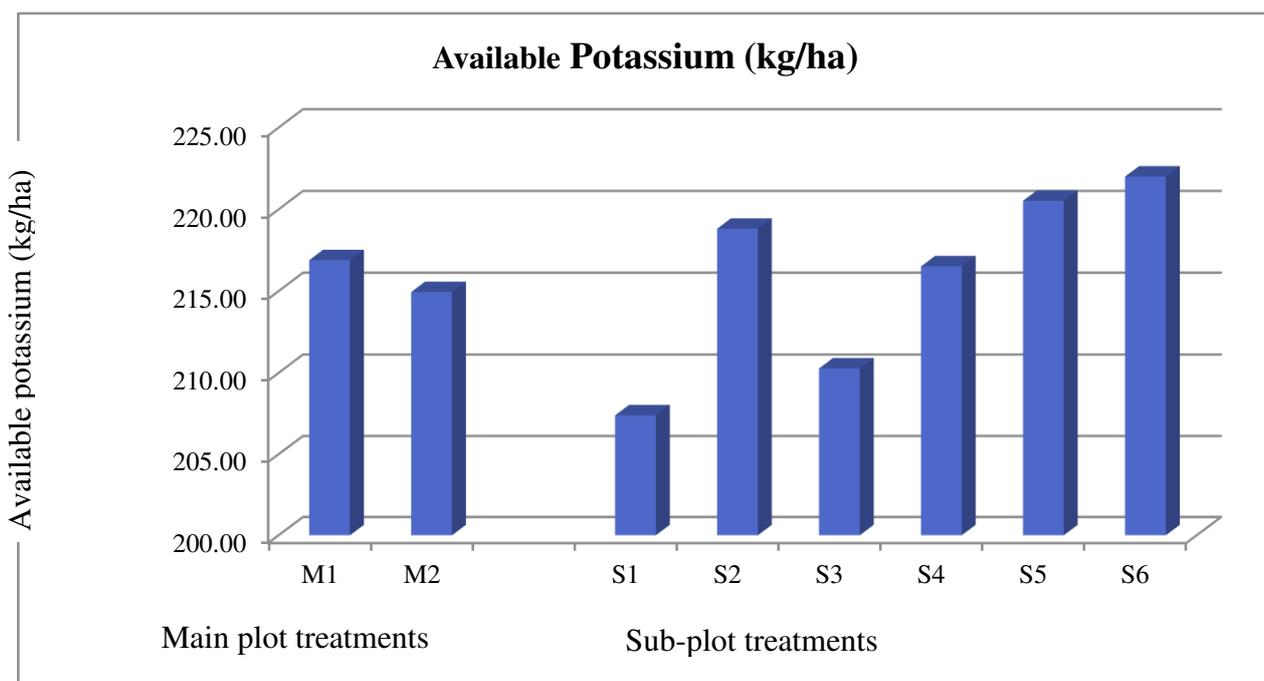




Figure 3: Available potassium status of soil (0-15cm) after harvest of *Bt* cotton as influenced by land configuration practices and spot application of organic manures

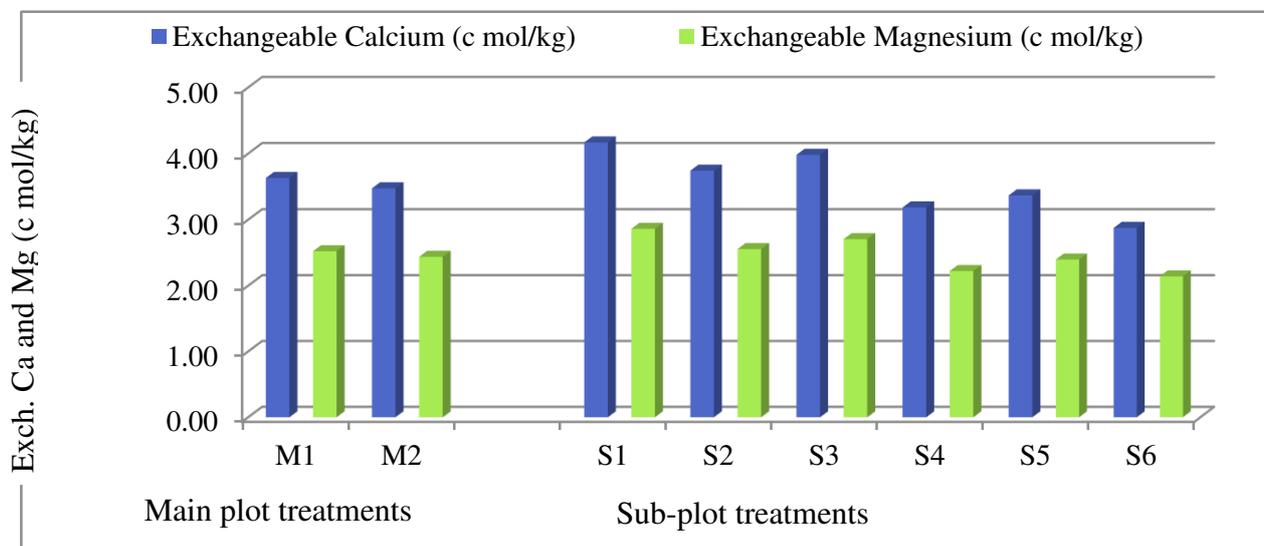


Figure 4: Exchangeable calcium and magnesium status of soil (0-15cm) after harvest of *Bt* cotton as influenced by land configuration practices and spot application of organic manures.

M₁ : Ridge

M ₁ : Ridge and furrow method of planting	RPP: FYM @ 10 t ha ⁻¹ + 180: 90: 90 kg of N P ₂ O ₅ K ₂ O ha ⁻¹
M ₂ : Flatbed method of planting	RDF: 180: 90: 90 kg of N P ₂ O ₅ K ₂ O ha ⁻¹
S ₁ : RDF only (Chemical fertilizers)	S ₅ : S ₁ +Blanket application Vermicompost @ 2.5t ha ⁻¹
S ₂ : RPP (Package of practice)	S ₆ : S ₁ + Spot application Vermicompost @ 2.5t ha ⁻¹
S ₃ : S ₁ +Blanket application FYM @ 5t ha ⁻¹	
S ₄ : S ₁ +Spot application FYM @ 5t ha ⁻¹	



IMPACT OF USING GROUNDWATER AS SOURCE OF IRRIGATION, ON SOIL PHYSICAL AND CHEMICAL PROPERTIES IN NORTHERN PARTS OF RANEBENNUR TALUK, HAVERI DISTRICT

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Abstract: An investigation was carried out to assess groundwater quality, its impact on soil properties in Northern parts of Ranebennur taluk, Haveri district. Representative groundwater samples as well as soil samples each 150 number from study area were collected and geographical locations were registered at each sampling site. The results revealed that the pH of groundwater samples from ranged from 6.6 to 8.2 with an average value 7.21. Groundwater samples were neutral to slightly alkaline. The EC of groundwater samples were ranged from 0.68 to 5.67 dS m⁻¹ with an average value 3.30 dSm⁻¹. Among the different cations and anions, Na⁺ and Cl⁻ were predominant in groundwater followed by Ca²⁺, Mg²⁺, K⁺ and SO₄²⁻, HCO₃⁻, CO₃⁻, respectively. Nitrate and boron content had an average value of 13.26 mmol L⁻¹ and 0.57 ppm, respectively. The average Sodium Adsorption Ratio was 14.05 mmol L⁻¹. Residual Sodium Carbonates 1.15 mmol L⁻¹, Total Hardness 23.06 mg L⁻¹ and Total Dissolved Salts 2115.37 mg L⁻¹. The groundwater quality parameters were interpreted according to their standard classification using Arc.GIS with spatial analyst GIS software for map preparation. Soil pH (mean value of 7.50) in the study area was varied between neutral to moderately alkaline and EC of soil samples had mean value 2.04 dS m⁻¹. The average OC in soil samples was 4.07 g kg⁻¹ and CaCO₃ of 5.58 per cent. It is noted that available nitrogen and sulphur were found low to medium; Phosphorus and potassium were medium to high. The exchangeable Ca²⁺ and Mg²⁺ content had an average value of 32.25 [cmol(p+) kg⁻¹] and 11.76 [cmol(p+) kg⁻¹], respectively. Exchangeable sodium and exchangeable sodium per cent were of 4.25 [cmol(p+) kg⁻¹] and 10.27 per cent, respectively. Zinc content in soil found deficient, while Copper was low to medium in availability. The iron and manganese were between medium to excess, while the boron content was low to medium in status.

Key Words: water quality, remote sensing, GIS, sodium adsorption ratio.

Introduction :

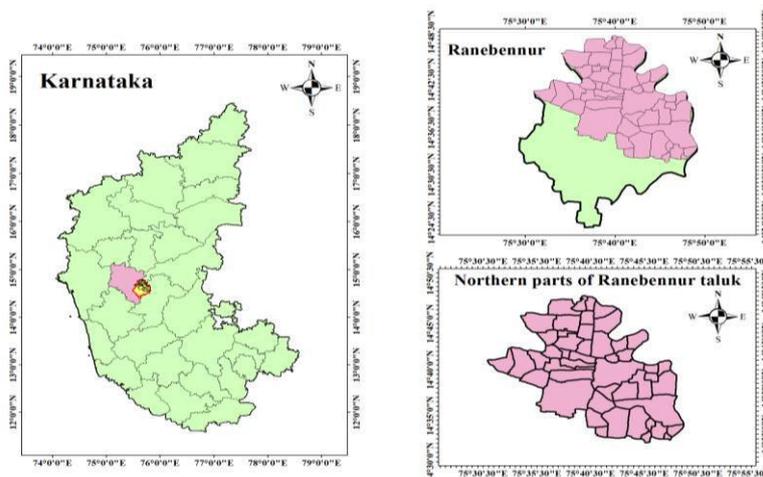
Water resources play significant role similar to that of agricultural land, the quality of irrigation water is a key factor in food security as well as nutritional security of the country. Groundwater is (naturally) recharged by rain water and snowmelt or from water that leaks through the bottom of some lakes and rivers. Quality of irrigation water is one of the main factors to be understood in irrigated agriculture. Injudicious irrigation practices even with good quality waters may turn many agriculturally good soils into saline or alkaline conditions, specific ion toxicity in plants and restricted water infiltration into soils with consequent adverse effects on crop production.

Irrigation with saline groundwater further complicates the problem where the interactions of several factors are to be understood. The use of groundwater is inescapable in some areas where no alternative facility for irrigation is available; such water is being used in Karnataka as a whole and Ranebennur taluk of Haveri district in particular, knowingly the quality and yield of the crop would continuously decrease. Hence, it is important to know the extent of damage caused to land due to use of poor-quality underground water for irrigation. Agriculture is the main occupation in this taluk with net sown area accounts 70.88 per cent and area sown more than once is 16.15 per cent of total geographical area in Ranebennur taluk. 61.9 per cent of the net area irrigated is through bore wells (groundwater), 0.74 per cent of the net area is irrigated through lift irrigation and remaining 37.26 per cent of net area is irrigated through other sources (Anon, 2019). Soil fertility and ground water quality survey furnishes useful information for planning proper soil and water management practices, which in turn plays an important role in augmenting crop production in Northern parts of Ranebennur taluk.



Material and methods

Ranebennur taluk is at the geographical centre of Karnataka spreading over 901 sq. km. This taluk lies between 14.62°N and 75.62°E. with total geographical area is 90745 ha. One hundred and fifty groundwater samples from tube wells were collected from 50 villages covering Northern parts of Ranebennur taluk. The geographical location of each sample was taken with the help of GPS (Global Positioning System). The tube wells were first allowed to discharge water for about 15 minutes in order to get sediment free clear water. Later the collected water samples were kept in the polyethylene bottles of 500 ml capacity. Each bottle was rinsed with the sample water before taking the water sample and 2-3 drops of toluene was added to avoid microbial growth. The bottles were then sealed airtight and labelled with sample code and village name. Water samples were filtered through ordinary filter paper for the removal of dirt and dust particles in the laboratory. The samples were properly labelled. All the water samples were subjected to chemical analysis for various parameters. Soil samples collected from the research area were subjected to analysis for various physico-chemical properties by adopting standard procedures.



Results and Discussion

The soil samples were collected from groundwater irrigated areas pertaining to Northern parts of Ranebennur Taluk. The soil samples were subjected to analysis of various chemical properties were presented in table 1 and were discussed as below.

Soil pH

The pH is important because it influences the availability of essential nutrients. Soil pH regulates plant nutrient availability by controlling the chemical forms of the different nutrients and also influence their chemical reactions. pH is a measure of hydrogen ion activity, presence of exchangeable bases such as calcium, magnesium and sodium gave a preponderance of hydroxyl ion over hydrogen ions. Soil sample collected from Airani village (Sample No. V₁S₂) recorded lower pH value. While higher pH value from Shidaganahal village (Sample No. V₄₀S₁). pH of study area was varied from neutral to moderately alkaline. Similar results were also reported by Huang *et al.* (2010) and Raut *et al.* (2017). Accumulation of bases especially Na⁺ under arid and semi-arid conditions seems to be the primary reason for saline and alkaline reaction.

Soil electrical conductivity (EC)

Electrical conductivity is a measure of the amount of salts in soil (salinity of soil). It is an important indicator of soil health. Yakalasapur village (Sample No. V₁₀S₃) recorded lowest EC values and while highest EC values recorded from Choudayyanapur village (Sample No. V₄₆S₁). This increase in EC of soil samples might be due to accumulation of salt on the surface of soil. The higher EC values of soil due to continuous use of salt contained groundwater for irrigation in the study area. Similar results were also obtained by Bhat *et al.* (2016). Majority of soils have EC less than 2 dSm⁻¹ and could be regarded as non-saline soils (Richards, 1954). High EC values in soils due to irrigation with poor quality water and low-lying area, besides this low level of EC may be due to good drainage condition which favour the removal of bases by drainage water.

Soil organic carbon (OC)

Soil organic carbon improves soil structure, the water holding capacity and rainfall infiltration properties of organic carbon soils create better landscape moisture availability. Root development and rainfall variation tolerance is also significantly enhanced in the soils with improved aggregation from carbon and contribute to nutrient retention and acts as source of carbon for microorganisms. Soil sample collected from Kunabev village (Sample No. V₃₀S₃)



recorded lower organic carbon value. While higher organic carbon value from Channapur village (Sample No. V₇S₁). Removal of nutrients from the surface soil containing organic carbon due to continuous cropping without FYM or crop residues was responsible for the lower organic carbon content in some fields. Similar results with respect to low organic carbon content were reported by Basavaraju *et al.* (2005). The lower contents of organic carbon apparently resulted because of high temperature which induced rapid rate of organic matter oxidation, while the declining trend towards accumulation of crop residues every year, without substantial downward movement (Kumar *et al.* 2015).

Soil calcium carbonate (CaCO₃)

Calcium carbonate, the chief component of limestone, is a widely used amendment to neutralize soil acidity and to supply calcium for plant nutrition. In addition to buffering soil pH against acidification, soil carbonates are also important for sequestering heavy metals. Hanumapur village (Sample No. V₁₆S₃) recorded maximum CaCO₃ value. Soil sample collected from Gangapur village (Sample No. V₁₂S₂) recorded lower CaCO₃ value. The calcareousness of soil is common feature in the soils of arid and semiarid climate particularly in Vertisols (black soils) due to precipitation of carbonates and bicarbonates under water stress. Soils formed from basaltic rocks under semi-arid climatic condition, characterized by low precipitation and high rate of evaporation favouring more accumulation and precipitation of CaCO₃ (Singh and Kundu, 2010). Calcareousness and the value of CaCO₃ vary from horizons with a tendency to increase with depth. This may be due to semi-arid climatic condition, where the leaching of bicarbonates from upper layers and subsequent precipitation triggers development of sodicity in subsoils. The similar trend of CaCO₃ content was reported by Durgude (1999).

Soil available nutrients were analysed from the soil samples collected from groundwater irrigated areas pertaining to Northern parts of Ranebennur taluk and the results are presented in table 2 and were discussed in detail as below

Soil Available Nitrogen (N)

The soil fertility Available Nitrogen production rely upon nutrients supply is really important for plant growth (structure), plant food processing (metabolism) and creation of chlorophyll. Nitrogen concentration of irrigated soil samples were recorded highest value from Hullikatti village (Sample No. V₂₁S₂) and lowest value recorded from Konanatambigi village (Sample No. V₂₈S₂). The available nitrogen content in the soils is dependent on temperature, rainfall and altitude. Another possible reason may also be due to low organic matter content in these areas due to low rainfall and low vegetation facilitate faster degradation and removal of organic matter leading to nitrogen deficiency. The medium nitrogen status was noticed in some area may be due to application of Nitrogen fertilizer coupled with high vegetative cover. The variation in N content may be related to soil management, application of FYM and fertilizer to previous crop (Kumar *et al.* 2015).

Soil Available Phosphorus (P₂O₅)

Available Phosphorus is one of the major soil nutrients and also constituent of plant cells and essential macro element required for plant nutrition. Soil sample collected from Kajjari village (Sample No. V₂₄S₃) recorded lower P₂O₅ value. While higher P₂O₅ value from Harangiri village (Sample No. V₁₇S₃). Medium status of available phosphorus in soils of study area might be due to alkaline soil reaction and low to medium content of CaCO₃ in the soil. At the higher pH calcium can precipitate with Phosphorus P as Calcium Phosphate and reduce Phosphorus availability. Similar results were also reported by Kumar *et al.* (2015). The red soils show low values of available phosphorus, which may be due to low CEC, clay content and acidic soil reaction of <6.5. The present findings are in line with those of Bidari *et al.* (2008).

Soil Available Potassium (K₂O)

Available Potassium is the most abundant cation in plant cells and is the second most abundant nutrient after nitrogen in leaves. The potential of parent material together with a conservation bio-geological cycle underlie maintenance of the supply of potassium to plants. K₂O of soil samples were highest Kamadod village (Sample No. V₂₆S₁). K₂O of soil samples were lowest value recorded from Kajjari village (Sample No. V₂₄S₃). Black soils show higher values than red soils due to predominance of K rich micaceous and feldspars minerals in parent material. Similar results were observed by Patel *et al.* (2019). In addition, Kaolinite type of clay mineralogy are the causes for their medium and low rating. The available K status of soils in the study area were medium to high, the variation in K status might be due to cultural practices, application of fertilizers, organic manures and other inputs perhaps may due to high clay content (>60 %). It has been observed that increase in organic carbon resulted in increased of available potassium content. This might be due to creation of favourable soil environment with the presence of high organic



matter content of soil. Availability of potassium in soil is influenced by the process of weathering and type of clay minerals present. Such results were also reported by Tundup *et al.* (2015).

Soil Exchangeable Calcium (Ca^{2+})

The amount of Ca^{2+} attains importance in areas where soils are either strongly alkaline or acidic. Calcium is an electrovalent and the most abundant cations occupying the exchange sites of the soil colloids, both organic and inorganic. Calcium is an essential plant nutrient required by plants in relatively large amount. Because calcium has affinity for the exchange sites than sodium, added calcium can improve soil structure by displacing sodium, which allows the negatively charged clay particles to aggregate. Soil sample collected from Chikka Kuravatti village (Sample No. V₉S₃) recorded lower Ca^{2+} value. While higher Ca^{2+} value from Ranebennur village (Sample No. V₃₉S₁). In both black and red soil, Ca^{2+} shows the strongest relationship with all the other species (Ca^{+2} , Mg^{+2} , K^{+} and Na^{+}), it was clear that Mg^{+2} was present in low amount than Ca^{+2} because of its mobility. If soils are alkaline, these soils have high exchangeable Na. However, Ca is a suitable ion to replace this Na from the exchange complex. The replaced sodium forms sodium sulphate which is leached down. These results are in conformity with the findings of Sharma *et al.* (1996). The low value of exchangeable monovalent compared to divalent due to preferential leaching of monovalent than divalent.

Soil Exchangeable Magnesium (Mg^{2+})

Magnesium is an essential plant nutrient and well known for its involvement in photosynthesis process, as it is a building block of chlorophyll, which makes leaves appear green. Magnesium deficiency might be a significant limiting factor in crop production. Soil sample collected from Airani village (Sample No. V₁S₂) recorded lower Mg^{2+} value. While higher Mg^{2+} value from Gangapur village (Sample No. V₁₂S₃). Availability of calcium and magnesium to the crops do not generally pose problems in black soils, as these soils are calcareous in nature. High values of CEC and exchangeable Ca^{2+} and Mg^{2+} is an indication of dominance of clay mineral as reported by Nayak *et al.* (2002). The exchangeable Ca^{2+} and Mg^{2+} activity may be attributed to the type and amount of clay, present in these soils.

Soil available Sulphur (S)

Sulphur is essential for the growth and development of all crops; sulphur also have some key functions in plants. The major sulphur source under natural conditions is the organic matter. More than 95 per cent of total sulphur in soil is present in the organic matter. Soil sample collected from Nalawagala village (Sample No. V₃₄S₁) recorded lower SO_4^{2-} value. While, higher SO_4^{2-} value from Ramapur village (Sample No. V₃₈S₃). Black soils have high gypsum and ferrous nature of sulphur which is non-available form (Basavaraju *et al.* 2005). Soil gets sulphur from the groundwater and rain water, fertilizer, fungicide and atmosphere. Sulphur become available with increase in decomposition of the organic matter in soil. Thus, in the arid and semi-arid regions, much of the sulphur in the soil may not in the organic form. Due to obvious reasons, the inorganic forms of sulphur are high under this condition. These results are in confirmation with the findings of Yeresheemi *et al.* (1997). Secondary nutrients in soil may be lost due to crop removal, leaching, erosion and volatilization. The amount of secondary nutrients re-moved by crops depends on soil type, crop species, fertilizer source and yield level. It is noted that N and S nutrients were found low to medium and P and K nutrients are medium to high in the soil samples.

Soil Exchangeable Sodium

The characteristic of soils from the agricultural stand point is that they contain sufficient exchangeable sodium to adversely affect the growth of most crop plants. Excess exchangeable sodium has an adverse effect on the physical and nutritional properties of the soil, with consequent reduction in crop growth, significantly or entirely. The soils lack appreciable quantities of neutral soluble salts but contain measurable to appreciable quantities of salts capable of alkaline hydrolysis, e.g., Sodium carbonate. Soil sample collected from Kunabev village (Sample No. V₃₀S₃) recorded lower exchangeable sodium value. While higher exchangeable sodium value from Heeladahalli village (Sample No. V₁₈S₁). High exchangeable sodium in soils had marked influence on the physical soil properties due to dispersion of soil particles. The rises in pH due to high exchangeable sodium interfere in the availability of nutrients. The present results get support from the findings of Nayak *et al.* (2002).

Exchangeable Sodium Per cent

The chief characteristic of soils from the agricultural stand point is that they contain sufficient exchangeable sodium to adversely affect the growth of most crop plants. Excess exchangeable sodium has an adverse effect on the physical and nutritional properties of the soil, with consequent reduction in crop growth, significantly or entirely. The



soils lack appreciable quantities of neutral soluble salts but contain measurable to appreciable quantities of salts capable of alkaline hydrolysis, e.g., Sodium carbonate. The exchangeable sodium percentage is calculated with the help of exchangeable sodium and cation exchange capacity. Kajjari village (Sample No. V₂₄S₃) recorded lower exchangeable sodium percentage content. While higher exchangeable sodium percentage content recorded from Heeladahalli village (Sample No. V₁₈S₁). Higher ESP content due to the soils of arid and semi-arid regions nearly always contain some calcium carbonate, a build-up in the exchangeable sodium in the absence of an appreciable quantity of neutral soluble salts will always result in high pH; the exact value depending on the concentration of Na₂CO₃, formed or the level of ESP. As the soils of the study are light in texture the exchangeable sodium percentage value about 15, does not reduce the permeability of the soils, thus movement of air, water and crop growth are not affected. These results are in conformity with the findings of Nayak *et al.* (2002).

Conclusions:

The soil samples collected from the groundwater irrigated fields were analysed for various physico-chemical properties and the results showed that bulk density of soil samples collected from groundwater irrigated areas had an average value of 1.35 g cc⁻¹ and porosity of soil samples had an average value of 49.18 per cent. The water holding capacity of soil samples collected from groundwater irrigated fields had mean value of 42.73 per cent and aggregate stability (MWD) of soil samples with an average value of 0.48 mm. It was observed that pH of soil samples collected from groundwater irrigated areas had an average value of 7.50. Soil pH of the study area was varied from neutral to moderately alkaline and EC of soil samples had a mean value of 2.04 dS m⁻¹. The OC content of soil samples had an average value of 4.07 g kg⁻¹ and CaCO₃ content with a mean value of 5.34 per cent. The soil available nutrients viz., N, P₂O₅, K₂O and SO₄²⁻ contents of soil samples had mean values of 318.51 kg ha⁻¹, 43.33 kg ha⁻¹, 277.60 kg ha⁻¹ and 26.61 kg ha⁻¹, respectively. The exchangeable Ca²⁺ and Mg²⁺ contents had average values of 32.25 [cmol(p+) kg⁻¹] and 11.76 [cmol(p+) kg⁻¹], respectively. Exchangeable sodium and exchangeable sodium per cent in the soil samples of groundwater irrigated areas had an average value of 4.25 [cmol(p+) kg⁻¹] and 10.27 per cent, respectively. Majority of the irrigated soil samples have salinity and alkalinity problem and also noted that N and SO₄²⁻ nutrients were found low to medium, P₂O₅ and K₂O nutrients were medium to high.

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Table 1. Chemical properties of soil samples collected from groundwater irrigated areas in Northern parts of Ranebennur Taluk

Village Name	Sample No.	pH	EC (dSm ⁻¹)	OC (g kg ⁻¹)	CaCO ₃ (%)
Airani	V ₁ S ₁	7.45	0.60	3.70	5.20
	V ₁ S ₂	6.58	3.60	4.10	4.90
	V ₁ S ₃	7.15	1.29	3.80	5.01
Ankasapur	V ₂ S ₁	7.95	0.83	3.60	6.76
	V ₂ S ₂	6.85	1.49	4.40	4.88
	V ₂ S ₃	7.94	2.00	4.10	3.90
Aremallapur	V ₃ S ₁	7.70	1.07	4.30	6.50
	V ₃ S ₂	8.05	1.37	5.10	7.90
	V ₃ S ₃	7.90	2.28	3.00	6.02
Belur	V ₄ S ₁	6.79	0.94	3.50	2.88
	V ₄ S ₂	7.20	3.14	4.90	4.90
	V ₄ S ₃	7.22	1.04	5.30	4.76
Bevinahalli	V ₅ S ₁	7.32	0.40	4.30	4.92
	V ₅ S ₂	7.20	1.34	5.10	4.12
	V ₅ S ₃	7.00	1.53	5.60	3.90
Chalageri	V ₆ S ₁	7.30	0.70	3.20	4.30
	V ₆ S ₂	7.13	4.67	4.50	4.79
	V ₆ S ₃	7.21	3.03	4.10	4.93
Channapur	V ₇ S ₁	8.00	1.16	5.90	7.02
	V ₇ S ₂	7.35	2.57	4.20	4.09
	V ₇ S ₃	7.40	3.35	4.00	4.15
Chikka Aralahalli	V ₈ S ₁	6.80	2.01	4.30	3.11
	V ₈ S ₂	7.35	0.98	3.90	4.90
	V ₈ S ₃	7.20	3.10	3.20	4.50
Chikka Kuravatti	V ₉ S ₁	7.40	2.69	3.50	5.06
	V ₉ S ₂	7.38	2.36	3.50	5.76
	V ₉ S ₃	7.40	3.46	3.90	3.90
Choudayyanapur	V ₁₀ S ₁	8.00	1.57	4.50	4.02
	V ₁₀ S ₂	7.08	2.43	4.20	5.01
	V ₁₀ S ₃	6.80	4.89	4.40	7.88
Devagondana katti	V ₁₁ S ₁	7.80	3.46	4.40	8.01
	V ₁₁ S ₂	7.15	2.30	4.70	6.90
	V ₁₁ S ₃	7.92	1.41	5.20	4.80
Gangapur	V ₁₂ S ₁	8.01	3.13	3.80	7.47
	V ₁₂ S ₂	6.74	0.90	3.70	2.31
	V ₁₂ S ₃	7.09	2.81	3.30	3.25
Gudagur	V ₁₃ S ₁	8.13	1.48	4.90	7.99
	V ₁₃ S ₂	7.32	3.07	4.50	4.77
	V ₁₃ S ₃	7.57	2.92	4.30	5.95
Guddadanveri	V ₁₄ S ₁	7.30	0.93	5.00	4.79
	V ₁₄ S ₂	7.81	1.79	5.10	5.88



Village Name	Sample No.	pH	EC (dSm ⁻¹)	OC (g kg ⁻¹)	CaCO ₃ (%)
Guddaguddapur	V ₁₄ S ₃	7.90	2.10	3.50	6.77
	V ₁₅ S ₁	7.45	0.47	3.80	5.11
	V ₁₅ S ₂	8.01	3.63	4.20	7.87
	V ₁₅ S ₃	7.20	2.13	4.30	4.05
Hanumapur	V ₁₆ S ₁	7.50	1.45	3.90	5.12
	V ₁₆ S ₂	7.95	4.02	4.40	5.83
	V ₁₆ S ₃	7.85	2.04	3.60	6.88
Harangiri	V ₁₇ S ₁	7.30	1.82	3.50	4.20
	V ₁₇ S ₂	6.76	1.31	3.10	3.09
	V ₁₇ S ₃	7.60	2.25	4.10	5.79

Contd...

Village Name	Sample No.	pH	EC (dSm ⁻¹)	OC (g kg ⁻¹)	CaCO ₃ (%)
Heeladahalli	V ₁₈ S ₁	7.42	4.56	3.70	5.13
	V ₁₈ S ₂	7.24	2.31	4.30	4.95
	V ₁₈ S ₃	7.50	1.49	4.00	5.17
Hirebidari	V ₁₉ S ₁	8.10	1.47	4.10	7.34
	V ₁₉ S ₂	7.15	2.54	4.50	3.07
	V ₁₉ S ₃	7.95	2.36	3.80	5.17
Honnatti	V ₂₀ S ₁	7.70	3.34	3.00	6.86
	V ₂₀ S ₂	8.20	3.07	4.80	7.71
	V ₂₀ S ₃	7.95	2.02	4.70	6.95
Hullikatti	V ₂₁ S ₁	7.60	0.65	2.90	5.10
	V ₂₁ S ₂	7.10	1.34	3.30	3.81
	V ₂₁ S ₃	7.97	2.54	3.20	6.93
Hullatti	V ₂₂ S ₁	6.90	4.00	3.30	3.12
	V ₂₂ S ₂	7.72	3.49	3.70	6.83
	V ₂₂ S ₃	7.09	2.70	4.10	3.78
Hunashikatti	V ₂₃ S ₁	7.72	2.16	3.60	5.08
	V ₂₃ S ₂	7.88	0.73	3.90	6.95
	V ₂₃ S ₃	6.87	3.49	4.20	3.79
Kajjari	V ₂₄ S ₁	7.70	4.34	4.30	5.86
	V ₂₄ S ₂	6.90	1.17	4.50	3.67
	V ₂₄ S ₃	7.15	2.48	4.10	4.77
Kakol	V ₂₅ S ₁	8.00	4.25	4.30	7.09
	V ₂₅ S ₂	7.27	2.31	4.40	4.10
	V ₂₅ S ₃	7.14	4.40	5.10	4.37
Kamadod	V ₂₆ S ₁	7.85	0.87	3.80	6.71
	V ₂₆ S ₂	7.90	3.99	5.30	7.13
	V ₂₆ S ₃	8.00	1.27	5.10	7.27
Karur	V ₂₇ S ₁	7.90	1.39	3.00	6.78
	V ₂₇ S ₂	7.80	3.52	3.50	6.65
	V ₂₇ S ₃	6.82	2.42	3.80	3.79
Konanatambigi	V ₂₈ S ₁	7.90	0.85	3.50	7.03
	V ₂₈ S ₂	7.90	1.18	3.30	7.15
	V ₂₈ S ₃	7.96	2.23	3.80	7.23
Kudrihal	V ₂₉ S ₁	7.35	1.06	3.30	4.84
	V ₂₉ S ₂	7.70	2.39	3.90	4.99
	V ₂₉ S ₃	7.50	1.53	3.10	5.82
Kunabev	V ₃₀ S ₁	7.90	0.47	3.00	6.04
	V ₃₀ S ₂	7.25	1.80	3.30	4.23



Village Name	Sample No.	pH	EC (dSm ⁻¹)	OC (g kg ⁻¹)	CaCO ₃ (%)
	V ₃₀ S ₃	7.15	3.15	2.10	4.15
Maidur	V ₃₁ S ₁	6.79	1.48	5.80	3.95
	V ₃₁ S ₂	7.22	1.49	5.10	4.37
	V ₃₁ S ₃	7.15	2.94	4.50	4.13
Medleri	V ₃₂ S ₁	6.90	1.37	2.90	3.10
	V ₃₂ S ₂	7.85	2.24	3.70	6.65
	V ₃₂ S ₃	7.95	2.16	3.30	6.89
Nadiharalalli	V ₃₃ S ₁	7.70	4.55	3.60	7.28
	V ₃₃ S ₂	7.10	0.72	3.90	3.83
	V ₃₃ S ₃	7.15	2.20	4.20	4.18
Nalawagala	V ₃₄ S ₁	8.30	0.95	2.90	7.56
	V ₃₄ S ₂	7.20	0.54	4.30	3.53
	V ₃₄ S ₃	7.13	2.02	4.60	4.21

Contd....

Village Name	Sample No.	pH	EC (dSm ⁻¹)	OC (g kg ⁻¹)	CaCO ₃ (%)
Nukapur	V ₃₅ S ₁	8.30	1.12	2.80	7.89
	V ₃₅ S ₂	7.36	2.46	4.50	5.11
	V ₃₅ S ₃	8.24	2.09	4.20	7.22
Padmavathipur	V ₃₆ S ₁	7.70	1.56	3.90	5.07
	V ₃₆ S ₂	7.20	2.34	4.80	4.87
	V ₃₆ S ₃	7.45	0.67	4.30	5.81
Rahutanakatti	V ₃₇ S ₁	8.40	1.06	2.80	7.95
	V ₃₇ S ₂	7.20	2.16	4.20	4.04
	V ₃₇ S ₃	7.36	4.50	4.10	4.99
Ramapur	V ₃₈ S ₁	6.97	2.31	3.60	3.35
	V ₃₈ S ₂	7.01	1.12	3.90	3.22
	V ₃₈ S ₃	7.50	0.62	3.70	4.79
Ranebennur	V ₃₉ S ₁	8.60	0.70	4.50	8.19
	V ₃₉ S ₂	7.45	4.57	4.10	5.92
	V ₃₉ S ₃	7.43	1.27	3.90	5.76
Shidaganahal	V ₄₀ S ₁	8.90	1.30	4.80	8.79
	V ₄₀ S ₂	8.34	2.50	5.10	8.36
	V ₄₀ S ₃	7.10	1.46	5.30	3.77
Shrinivasapur	V ₄₁ S ₁	7.47	3.18	5.60	4.60
	V ₄₁ S ₂	7.93	2.02	5.50	5.72
	V ₄₁ S ₃	6.95	0.91	4.60	3.33
Somlapur	V ₄₂ S ₁	7.80	0.80	4.30	5.42
	V ₄₂ S ₂	7.20	1.35	4.40	3.04
	V ₄₂ S ₃	7.60	0.51	3.90	5.03
Udagatti	V ₄₃ S ₁	8.00	3.36	2.90	7.06
	V ₄₃ S ₂	7.95	0.48	3.00	6.22
	V ₄₃ S ₃	7.79	1.54	4.50	6.03
Venkatapur	V ₄₄ S ₁	8.10	0.48	3.20	6.88
	V ₄₄ S ₂	7.15	2.45	4.40	5.03
	V ₄₄ S ₃	7.30	1.48	3.90	5.88
Waderayanahalli	V ₄₅ S ₁	6.87	2.70	4.10	3.13
	V ₄₅ S ₂	7.37	0.95	3.90	4.06
	V ₄₅ S ₃	7.22	1.25	4.30	4.02



Village Name	Sample No.	pH	EC (dSm ⁻¹)	OC (g kg ⁻¹)	CaCO ₃ (%)
Yakalapur	V ₄₆ S ₁	7.20	0.39	3.20	3.99
	V ₄₆ S ₂	8.10	1.47	4.10	7.35
	V ₄₆ S ₃	7.60	3.22	3.90	5.03
Yallapur T medleri	V ₄₇ S ₁	6.83	1.07	4.00	3.04
	V ₄₇ S ₂	7.92	1.96	5.50	6.82
	V ₄₇ S ₃	7.01	2.13	4.80	3.84
Yattinahalli	V ₄₈ S ₁	7.36	1.28	4.50	4.05
	V ₄₈ S ₂	7.98	2.19	4.60	6.78
	V ₄₈ S ₃	6.92	0.90	3.90	3.22
Yellapur T honnatti	V ₄₉ S ₁	7.45	1.23	5.20	5.11
	V ₄₉ S ₂	7.36	4.59	4.20	5.04
	V ₄₉ S ₃	8.25	1.46	3.20	6.03
Yennihosahali	V ₅₀ S ₁	7.79	1.34	3.60	6.88
	V ₅₀ S ₂	7.31	2.64	3.60	5.34
	V ₅₀ S ₃	7.25	1.07	4.10	5.12
Minimum		6.58	0.39	2.10	2.31
Maximum		8.90	4.89	5.90	8.79
Mean		7.50	2.04	4.07	5.34
S.D		0.44	1.11	0.72	1.47
C.V		5.91	54.50	17.88	27.49

Table 2. Available nutrients status of soil samples collected from groundwater irrigated areas in Northern parts of Ranebennur taluk

Village Name	Sample No.	Primary nutrients			Secondary nutrients			Ex-Na ⁺ cmol(p+) kg ⁻¹	ESP
		kg ha ⁻¹			cmol(p+) kg ⁻¹		kg ha ⁻¹		
		N	P ₂ O ₅	K ₂ O	Ex-Ca ²⁺	Ex-Mg ²⁺			
Airani	V ₁ S ₁	386.41	58.17	309.12	22.20	15.40	33.75	2.03	11.68
	V ₁ S ₂	404.23	27.94	222.56	19.80	9.20	18.00	7.57	15.90
	V ₁ S ₃	336.24	57.25	255.36	22.00	15.00	35.00	5.43	6.87
Ankasapur	V ₂ S ₁	229.65	60.00	395.68	31.80	14.20	20.62	6.28	7.76
	V ₂ S ₂	333.85	29.77	282.24	27.55	16.00	27.37	5.90	12.48
	V ₂ S ₃	323.25	51.53	255.36	22.20	16.50	17.00	3.65	4.06
Aremallapur	V ₃ S ₁	347.41	39.39	241.92	20.20	12.20	32.00	3.07	12.66
	V ₃ S ₂	189.04	30.92	239.23	32.45	13.50	24.87	3.59	10.56
	V ₃ S ₃	337.87	35.27	282.24	20.50	14.40	31.25	5.04	14.18
Belur	V ₄ S ₁	426.00	30.69	236.00	35.00	16.40	17.87	3.79	10.16
	V ₄ S ₂	233.25	40.08	322.56	23.24	13.50	32.50	7.80	17.60
	V ₄ S ₃	325.20	35.72	255.36	22.56	9.60	16.87	6.38	16.09
Bevinahalli	V ₅ S ₁	258.56	65.95	224.44	26.60	16.80	28.12	1.59	9.89
	V ₅ S ₂	335.52	56.33	254.01	37.34	14.60	25.75	5.80	8.91
	V ₅ S ₃	254.42	35.95	208.32	23.45	13.70	20.62	4.42	5.29
Chalageri	V ₆ S ₁	362.64	35.27	366.11	20.23	9.40	33.12	1.89	6.94
	V ₆ S ₂	254.28	61.14	263.42	19.77	16.70	30.75	1.96	14.42
	V ₆ S ₃	344.63	29.31	262.08	18.33	16.80	16.50	6.80	14.17
Channapur	V ₇ S ₁	265.12	35.50	213.69	23.20	12.50	25.00	3.17	6.11
	V ₇ S ₂	189.34	58.62	337.88	22.34	15.60	35.00	2.92	4.29
	V ₇ S ₃	248.56	44.88	224.44	36.40	13.60	32.37	4.09	5.09
Chikka Aralahalli	V ₈ S ₁	357.83	32.52	282.24	26.40	14.20	26.00	2.78	12.81
	V ₈ S ₂	335.20	28.63	255.36	30.60	12.50	19.37	3.59	8.37



Village Name	Sample No.	Primary nutrients			Secondary nutrients			Ex-Na ⁺ cmol(p+) kg ⁻¹	ESP
		kg ha ⁻¹			cmol(p+) kg ⁻¹		kg ha ⁻¹		
		N	P ₂ O ₅	K ₂ O	Ex-Ca ²⁺	Ex-Mg ²⁺	SO ₄ ²⁻		
	V ₈ S ₃	353.45	31.14	241.92	22.11	15.60	30.00	1.75	6.79
Chikka Kuravatti	V ₉ S ₁	198.04	60.91	339.23	23.60	16.60	20.25	2.59	12.80
	V ₉ S ₂	325.82	63.20	282.24	19.89	14.60	31.12	4.12	8.40
	V ₉ S ₃	413.05	30.92	336.00	14.50	13.50	18.00	1.81	17.68
Choudayyanapur	V ₁₀ S ₁	242.26	37.56	322.56	22.80	9.40	24.75	6.69	10.43
	V ₁₀ S ₂	366.20	42.59	255.36	22.40	15.60	26.75	5.49	13.37
	V ₁₀ S ₃	200.55	28.85	324.44	35.34	14.60	29.12	7.75	16.62
Devagondana katti	V ₁₁ S ₁	357.52	38.47	254.01	28.00	9.80	29.25	4.69	7.61
	V ₁₁ S ₂	205.40	65.49	308.32	20.20	16.60	26.62	1.87	12.35
	V ₁₁ S ₃	234.49	44.88	309.12	30.25	15.60	31.00	3.89	10.10
Gangapur	V ₁₂ S ₁	424.26	33.43	322.56	26.00	14.60	23.75	6.48	13.46
	V ₁₂ S ₂	357.28	60.91	255.36	24.67	16.60	16.12	3.28	10.78
	V ₁₂ S ₃	306.60	34.12	395.68	27.38	16.90	30.00	2.65	12.66
Gudagur	V ₁₃ S ₁	252.85	63.20	282.24	33.40	14.60	32.25	5.24	7.62
	V ₁₃ S ₂	305.20	40.30	255.36	30.23	15.60	24.75	5.60	12.04
	V ₁₃ S ₃	334.40	38.47	341.92	21.34	16.80	32.50	2.23	9.89
Guddadanveri	V ₁₄ S ₁	193.04	42.14	239.23	25.60	12.40	29.00	4.99	8.75
	V ₁₄ S ₂	331.80	38.47	282.24	23.24	11.80	19.50	4.51	15.57
	V ₁₄ S ₃	257.04	31.37	309.12	20.50	12.70	36.12	4.41	14.92
Guddaguddapur	V ₁₅ S ₁	424.20	36.18	322.56	34.60	12.80	18.00	3.06	10.72
	V ₁₅ S ₂	361.23	63.66	355.36	22.45	13.80	28.87	3.58	13.26
	V ₁₅ S ₃	236.53	33.66	295.68	25.34	14.70	22.50	2.26	8.94
Hanumapur	V ₁₆ S ₁	303.52	60.91	282.24	26.68	12.60	27.12	4.97	11.59
	V ₁₆ S ₂	261.40	40.53	355.36	30.55	11.70	36.12	6.02	15.93
	V ₁₆ S ₃	332.63	33.43	241.92	21.45	10.60	19.00	3.05	12.77
Harangiri	V ₁₇ S ₁	245.28	60.00	239.23	30.27	12.20	37.25	5.50	4.15
	V ₁₇ S ₂	321.63	31.60	282.24	23.24	15.80	17.87	3.87	6.49
	V ₁₇ S ₃	262.12	68.01	336.00	22.99	16.70	36.75	6.34	12.14

Contd...

Village Name	Sample No.	Primary nutrients			Secondary nutrients			Ex-Na ⁺ cmol(p+) kg ⁻¹	ESP
		kg ha ⁻¹			cmol(p+) kg ⁻¹		kg ha ⁻¹		
		N	P ₂ O ₅	K ₂ O	Ex-Ca ²⁺	Ex-Mg ²⁺	SO ₄ ²⁻		
Heeladahalli	V ₁₈ S ₁	195.36	53.13	322.56	34.00	13.20	29.75	7.82	18.06
	V ₁₈ S ₂	268.53	38.01	255.36	22.34	15.60	21.62	3.23	12.28
	V ₁₈ S ₃	342.80	56.33	324.44	36.45	14.60	27.37	4.36	7.57
Hirebidari	V ₁₉ S ₁	362.23	36.18	254.01	22.60	15.80	27.00	4.01	6.12
	V ₁₉ S ₂	351.80	64.58	308.32	23.45	16.20	32.00	3.51	3.82
	V ₁₉ S ₃	332.23	42.82	266.11	18.00	15.70	24.87	4.89	8.06
Honnatti	V ₂₀ S ₁	344.40	37.10	263.42	25.80	12.20	31.25	4.03	9.78
	V ₂₀ S ₂	193.04	33.43	262.08	34.56	14.60	34.87	4.87	6.90
	V ₂₀ S ₃	362.84	35.50	313.69	17.67	11.50	32.50	4.33	16.28
Hullikatti	V ₂₁ S ₁	344.00	38.01	237.88	20.40	16.60	16.87	3.42	5.90
	V ₂₁ S ₂	462.24	40.30	224.44	23.56	14.60	28.12	3.05	12.84
	V ₂₁ S ₃	336.24	31.14	382.24	30.88	13.60	25.75	2.37	12.85
Hullatti	V ₂₂ S ₁	351.84	35.72	255.36	30.48	12.60	30.62	6.70	16.79



Village Name	Sample No.	Primary nutrients			Secondary nutrients			Ex-Na ⁺ cmol(p+) kg ⁻¹	ESP
		kg ha ⁻¹			cmol(p+) kg ⁻¹		kg ha ⁻¹		
		N	P ₂ O ₅	K ₂ O	Ex-Ca ²⁺	Ex-Mg ²⁺	SO ₄ ²⁻		
	V ₂₂ S ₂	317.05	59.77	241.92	23.45	12.70	23.12	1.92	14.55
	V ₂₂ S ₃	316.40	28.85	239.23	19.67	16.60	30.75	2.49	10.45
	Hunashikatti	V ₂₃ S ₁	193.06	52.67	282.24	26.40	12.00	16.50	2.29
	V ₂₃ S ₂	344.26	38.24	236.00	26.00	14.70	35.00	3.81	11.08
	V ₂₃ S ₃	327.48	33.43	322.56	24.56	14.60	25.00	2.31	7.92
	Kajjari	V ₂₄ S ₁	242.07	44.88	355.36	32.45	12.60	26.75	6.86
	V ₂₄ S ₂	223.86	58.85	224.44	21.45	12.70	19.12	3.19	6.18
	V ₂₄ S ₃	261.05	23.13	354.01	36.00	10.10	29.25	4.46	3.33
	Kakol	V ₂₅ S ₁	417.24	36.18	309.12	24.20	11.80	26.62	7.53
	V ₂₅ S ₂	373.25	28.85	322.56	22.13	14.60	21.00	1.99	6.80
	V ₂₅ S ₃	243.56	35.50	345.36	24.11	15.50	33.75	1.57	14.18
	Kamadod	V ₂₆ S ₁	375.52	61.58	295.68	27.20	16.80	16.12	4.23
	V ₂₆ S ₂	266.44	51.75	282.24	24.35	14.60	20.00	5.87	14.29
	V ₂₆ S ₃	383.63	38.01	255.36	22.45	15.60	26.75	4.11	9.57
	Karur	V ₂₇ S ₁	353.25	33.43	251.92	34.20	14.60	27.37	5.00
	V ₂₇ S ₂	325.65	43.05	239.23	23.24	12.80	17.00	5.97	12.96
	V ₂₇ S ₃	367.22	36.18	232.24	32.45	12.80	32.00	4.33	9.48
	Konanatambigi	V ₂₈ S ₁	344.41	67.33	316.00	26.60	14.40	34.87	2.19
	V ₂₈ S ₂	178.34	33.21	322.56	33.22	13.50	21.25	5.95	9.27
	V ₂₈ S ₃	333.81	55.19	255.36	23.24	14.10	34.00	2.66	11.96
	Kudrihal	V ₂₉ S ₁	421.00	31.60	214.44	25.80	13.80	32.87	6.35
	V ₂₉ S ₂	412.22	55.42	254.01	22.34	14.20	16.87	2.48	11.05
	V ₂₉ S ₃	316.23	41.45	208.32	24.24	13.10	27.37	2.00	10.97
	Kunabev	V ₃₀ S ₁	209.56	33.89	236.11	29.00	14.80	16.87	5.65
	V ₃₀ S ₂	341.52	67.78	263.42	26.34	13.60	32.25	1.75	5.52
	V ₃₀ S ₃	263.42	32.52	262.08	23.77	14.20	24.75	1.55	12.98
	Maidur	V ₃₁ S ₁	334.81	33.89	313.69	27.60	15.80	26.00	6.06
	V ₃₁ S ₂	365.20	37.79	237.88	30.33	14.50	29.50	3.73	12.54
	V ₃₁ S ₃	372.43	42.37	244.44	34.35	13.50	16.12	4.89	9.27
	Medleri	V ₃₂ S ₁	226.44	36.18	362.24	35.20	15.80	28.00	4.85
	V ₃₂ S ₂	345.22	38.24	255.36	24.35	16.70	29.75	3.32	6.79
	V ₃₂ S ₃	305.41	56.33	241.92	25.32	14.60	36.00	6.47	4.78
	Nadiharalalli	V ₃₃ S ₁	246.24	58.17	239.23	32.80	15.40	27.37	7.79
	V ₃₃ S ₂	354.86	37.56	282.24	27.60	15.40	25.62	4.71	12.63
	V ₃₃ S ₃	427.05	32.98	336.00	34.33	14.40	19.00	5.54	11.87
	Nalawagala	V ₃₄ S ₁	241.04	58.85	222.56	25.32	15.70	7.25	1.99
	V ₃₄ S ₂	416.23	40.30	255.36	22.34	14.60	28.12	4.12	10.20
	V ₃₄ S ₃	336.24	65.49	254.44	26.78	11.60	17.00	4.20	4.32
	Nukapur	V ₃₅ S ₁	285.55	38.01	264.01	22.00	13.60	19.62	5.43
	V ₃₅ S ₂	344.52	43.51	238.32	23.20	12.00	31.62	3.37	6.72
	V ₃₅ S ₃	267.46	55.19	309.12	36.00	14.10	16.62	2.23	11.34

Contd...

Village Name	Sample No.	Primary nutrients			Secondary nutrients			Ex-Na ⁺ cmol(p+) kg ⁻¹	ESP
		kg ha ⁻¹			cmol(p+) kg ⁻¹		kg ha ⁻¹		
		N	P ₂ O ₅	K ₂ O	Ex-Ca ²⁺	Ex-Mg ²⁺	SO ₄ ²⁻		
Padmavathipur	V ₃₆ S ₁	364.85	40.76	372.56	25.00	15.80	27.00	2.58	9.66



Village Name	Sample No.	Primary nutrients			Secondary nutrients			Ex-Na ⁺ cmol(p+) kg ⁻¹	ESP
		kg ha ⁻¹			cmol(p+) kg ⁻¹				
		N	P ₂ O ₅	K ₂ O	Ex-Ca ²⁺	Ex-Mg ²⁺	kg ha ⁻¹ SO ₄ ²⁻		
	V ₃₆ S ₂	329.27	37.79	235.36	32.46	13.50	32.12	1.79	9.65
	V ₃₆ S ₃	363.40	44.88	295.68	22.00	15.60	34.75	3.19	12.31
Rahutanakatti	V ₃₇ S ₁	293.04	56.33	282.24	24.40	14.60	32.00	3.51	12.10
	V ₃₇ S ₂	362.24	51.53	265.36	34.34	15.50	24.37	3.40	11.59
	V ₃₇ S ₃	366.46	31.14	221.92	22.67	13.60	33.37	7.60	17.80
Ramapur	V ₃₈ S ₁	328.06	61.60	239.23	36.01	16.20	26.87	3.58	5.26
	V ₃₈ S ₂	453.24	51.30	292.24	33.25	13.40	17.37	1.74	7.83
	V ₃₈ S ₃	432.03	36.87	356.00	24.35	14.10	37.25	4.07	7.87
Ranebennur	V ₃₉ S ₁	212.23	32.52	322.56	39.20	11.20	22.00	3.34	5.64
	V ₃₉ S ₂	316.20	34.58	265.36	33.45	15.10	34.62	7.43	16.72
	V ₃₉ S ₃	334.44	34.81	234.44	24.35	12.20	33.25	3.31	12.63
Shidaganahal	V ₄₀ S ₁	290.43	45.34	257.01	22.20	14.80	19.59	1.91	9.85
	V ₄₀ S ₂	355.85	46.95	228.32	22.45	13.50	36.12	6.66	4.16
	V ₄₀ S ₃	422.06	65.72	236.11	27.49	14.70	28.00	2.40	4.46
Shrinivasapur	V ₄₁ S ₁	411.23	42.14	263.42	36.00	12.40	18.87	3.28	10.83
	V ₄₁ S ₂	315.23	32.75	262.08	24.39	13.30	33.37	2.85	4.30
	V ₄₁ S ₃	285.56	40.76	213.69	26.00	12.80	17.82	6.33	9.32
Somlapur	V ₄₂ S ₁	315.23	52.21	257.88	32.40	12.80	34.87	1.82	6.58
	V ₄₂ S ₂	317.40	49.24	220.44	33.24	13.50	33.12	6.26	8.11
	V ₄₂ S ₃	295.64	35.72	282.24	27.34	15.60	16.97	5.17	9.18
Udagatti	V ₄₃ S ₁	314.83	53.13	254.36	21.80	16.20	27.37	3.13	14.54
	V ₄₃ S ₂	421.44	60.57	231.92	37.20	16.40	27.00	6.24	10.61
	V ₄₃ S ₃	418.24	37.33	219.23	24.35	14.30	29.00	4.63	13.76
Venkatapur	V ₄₄ S ₁	314.25	30.69	282.24	31.00	14.40	27.25	6.55	8.14
	V ₄₄ S ₂	215.56	37.10	346.00	32.45	13.20	27.87	3.01	5.16
	V ₄₄ S ₃	191.14	32.75	362.56	27.49	14.30	36.87	5.78	11.76
Waderayanahalli	V ₄₅ S ₁	310.23	42.59	215.36	26.00	9.60	19.99	2.73	11.00
	V ₄₅ S ₂	332.43	58.40	274.44	26.00	15.50	31.75	5.58	5.55
	V ₄₅ S ₃	194.74	30.23	254.01	22.40	9.20	26.75	4.20	11.39
Yakalapur	V ₄₆ S ₁	354.84	49.92	238.32	32.6	10.80	26.75	3.48	5.94
	V ₄₆ S ₂	331.05	31.83	379.12	22.00	11.90	31.75	6.39	13.06
	V ₄₆ S ₃	421.23	39.85	332.56	23.20	11.40	15.25	3.72	4.77
Yallapur medleri	V ₄₇ S ₁	343.26	30.00	257.36	36.00	13.10	34.62	2.92	5.55
	V ₄₇ S ₂	280.33	51.53	294.68	32.45	12.50	24.87	6.44	9.32
	V ₄₇ S ₃	367.52	35.72	283.24	27.49	13.60	33.37	5.87	13.78
Yattinahalli	V ₄₈ S ₁	263.43	34.35	258.36	35.00	15.00	17.95	5.43	8.95
	V ₄₈ S ₂	362.64	60.69	242.92	25.00	16.50	18.72	3.84	5.78
	V ₄₈ S ₃	323.23	44.43	239.23	32.46	13.40	25.75	1.75	6.94
Yellapur honnatti	V ₄₉ S ₁	357.66	32.52	282.24	27.20	15.20	30.62	2.99	12.55
	V ₄₉ S ₂	379.25	40.08	326.00	36.00	14.50	33.12	7.73	15.93
	V ₄₉ S ₃	303.40	54.73	352.56	35.00	13.90	26.12	5.63	10.87
Yennihosahali	V ₅₀ S ₁	294.74	49.92	225.36	24.20	14.80	30.75	5.75	13.85
	V ₅₀ S ₂	352.84	31.83	227.44	35.20	13.90	26.75	4.46	6.41
	V ₅₀ S ₃	410.44	28.63	252.01	24.35	13.50	27.37	3.44	11.89
Minimum		178.34	23.13	208.32	14.50	9.20	7.25	1.55	3.33
Maximum		462.24	68.01	395.68	39.20	16.90	37.25	7.82	18.06
Mean		318.51	43.33	277.60	26.93	14.02	26.61	4.25	10.27
S.D		65.97	11.61	45.26	5.33	1.82	6.33	1.71	3.71



Village Name	Sample No.	Primary nutrients			Secondary nutrients			Ex-Na ⁺ cmol(p+) kg ⁻¹	ESP
		kg ha ⁻¹			cmol(p+) kg ⁻¹		kg ha ⁻¹		
		N	P ₂ O ₅	K ₂ O	Ex-Ca ²⁺	Ex-Mg ²⁺	SO ₄ ²⁻		
C.V		20.71	26.79	16.30	19.82	13.01	23.79	40.38	36.17

Contd...



ANNEXURE

Concentration of anions and cations of groundwater samples collected from Northern parts of Ranebennur taluk

Village	Sample No.	Cations (mmol L ⁻¹)				Anions (mmol L ⁻¹)				mg L ⁻¹	
		Na ⁺	K ⁺	Ca ²⁺	Mg ²⁺	CO ₃ ⁻²	HCO ⁻³	Cl ⁻¹	SO ₄ ²⁻	NO ₃ ⁻	B
Airani	V ₁ S ₁	18.34	0.064	3.60	1.80	0.20	6.02	15.34	4.89	7.35	0.26
	V ₁ S ₂	25.09	0.025	6.20	3.00	0.80	9.40	21.01	2.52	14.32	0.45
	V ₁ S ₃	33.18	0.043	7.50	3.40	0.20	7.60	31.20	3.40	16.36	0.69
Ankasapur	V ₂ S ₁	18.34	0.071	12.20	5.45	0.40	8.40	14.60	3.70	11.30	0.35
	V ₂ S ₂	22.06	0.023	6.10	2.40	0.30	11.00	16.00	5.20	5.72	0.11
	V ₂ S ₃	31.23	0.045	5.20	3.20	0.80	7.20	22.00	3.50	15.25	0.35
Aremallapur	V ₃ S ₁	23.91	0.064	6.60	3.10	0.60	8.30	19.00	3.66	6.06	0.60
	V ₃ S ₂	22.48	0.064	4.20	2.00	0.45	7.40	23.00	3.20	12.25	0.30
	V ₃ S ₃	26.77	0.054	7.90	3.89	0.40	7.40	29.20	3.50	10.11	1.10
Belur	V ₄ S ₁	25.23	0.013	4.80	2.80	0.10	6.45	32.45	4.84	10.23	0.44
	V ₄ S ₂	20.83	0.064	7.23	3.40	0.20	3.60	23.00	4.60	17.36	0.86
	V ₄ S ₃	23.38	0.012	5.60	2.32	0.30	9.00	16.45	5.50	12.32	0.52
Bevinahalli	V ₅ S ₁	18.43	0.038	5.80	2.77	0.10	6.30	16.00	5.16	19.39	0.56
	V ₅ S ₂	15.67	0.021	4.40	2.10	0.20	8.20	12.45	3.20	17.35	0.27
	V ₅ S ₃	22.06	0.012	3.10	1.67	0.80	7.20	14.32	5.40	12.36	0.96
Chalageri	V ₆ S ₁	29.34	0.066	7.80	3.99	0.60	7.20	25.00	6.61	6.30	0.56
	V ₆ S ₂	30.48	0.064	11.40	5.50	0.90	5.80	35.20	4.30	12.00	0.31
	V ₆ S ₃	24.56	0.025	7.40	3.14	0.23	6.20	22.00	6.50	11.24	0.59
Channapur	V ₇ S ₁	15.46	0.041	7.90	3.19	0.40	9.60	9.34	3.77	4.66	0.35
	V ₇ S ₂	26.13	0.062	3.34	1.42	0.80	10.60	15.60	5.50	4.39	0.15
	V ₇ S ₃	21.83	0.054	5.20	2.70	0.20	7.60	18.56	6.20	19.19	0.55
Chikka Aralahalli	V ₈ S ₁	27.05	0.087	9.00	4.20	0.80	9.33	20.13	7.56	2.12	0.63
	V ₈ S ₂	14.67	0.084	5.00	2.10	0.30	8.00	8.79	4.32	8.80	0.76
	V ₈ S ₃	30.46	0.089	6.40	3.60	0.50	7.80	30.34	4.20	4.89	0.69
Chikka Kuravatti	V ₉ S ₁	23.56	0.014	2.80	1.60	0.40	8.56	15.46	3.39	4.61	1.36
	V ₉ S ₂	23.78	0.094	3.60	2.40	0.56	7.56	14.67	6.02	8.08	1.25
	V ₉ S ₃	22.79	0.065	1.40	0.78	0.45	9.00	17.45	2.50	4.30	0.60
Devagondana katti	V ₁₀ S ₁	29.34	0.160	6.00	3.40	0.60	9.80	16.00	5.59	7.12	0.59
	V ₁₀ S ₂	30.69	0.250	3.10	1.50	0.40	6.65	21.45	6.60	12.75	0.57
	V ₁₀ S ₃	32.02	0.064	4.10	2.09	0.30	4.80	26.00	3.20	19.89	0.19

Contd.....



Village	Sample No.	Cations (mmol L ⁻¹)				Anions (mmol L ⁻¹)				mg L ⁻¹	
		Na ⁺	K ⁺	Ca ²⁺	Mg ²⁺	CO ₃ ²⁻	HCO ³⁻	Cl ⁻	SO ₄ ²⁻	NO ₃ ⁻	B
Choudayyadanapur	V ₁₁ S ₁	14.56	0.043	6.10	2.40	2.10	9.00	10.60	2.96	21.53	0.37
	V ₁₁ S ₂	32.45	0.069	4.34	2.10	0.30	6.40	26.44	5.20	6.26	0.77
	V ₁₁ S ₃	31.25	0.054	4.70	2.20	1.20	8.34	20.34	7.20	13.76	0.82
Gangapur	V ₁₂ S ₁	37.91	0.058	3.20	1.70	0.80	4.80	28.40	2.44	14.44	0.10
	V ₁₂ S ₂	29.91	0.041	4.20	2.45	0.20	7.60	23.60	4.50	15.52	1.50
	V ₁₂ S ₃	21.43	0.087	5.20	2.30	1.10	3.40	14.56	5.60	5.62	1.70
Gudagur	V ₁₃ S ₁	29.91	0.089	4.32	2.80	0.20	7.60	20.60	7.00	10.52	0.78
	V ₁₃ S ₂	26.57	0.056	4.35	3.70	0.23	5.20	18.34	8.60	9.16	0.08
	V ₁₃ S ₃	27.78	0.054	3.10	1.80	0.20	6.45	23.45	3.40	16.05	0.59
Guddadanveri	V ₁₄ S ₁	36.95	0.071	10.00	4.67	0.60	9.40	33.46	9.88	8.99	1.65
	V ₁₄ S ₂	29.51	0.065	6.78	3.00	1.20	3.40	31.24	3.50	9.58	2.33
	V ₁₄ S ₃	27.91	0.085	4.20	1.98	0.45	4.80	18.46	7.50	15.25	1.10
Guddaguddapur	V ₁₅ S ₁	35.86	0.087	4.60	2.40	0.40	7.20	28.64	5.38	19.06	0.39
	V ₁₅ S ₂	37.23	0.075	3.78	2.40	1.30	3.60	30.72	7.50	14.96	0.65
	V ₁₅ S ₃	25.46	0.054	2.45	1.78	0.40	2.20	20.46	4.60	6.60	0.14
Hanumapur	V ₁₆ S ₁	43.47	0.020	7.89	5.46	0.34	8.90	33.45	8.32	19.95	0.79
	V ₁₆ S ₂	30.25	0.045	4.30	2.13	0.34	8.67	21.64	1.60	12.20	0.85
	V ₁₆ S ₃	23.77	0.065	8.45	3.40	0.40	7.00	24.46	6.00	21.02	0.69
Harangiri	V ₁₇ S ₁	30.43	0.035	3.00	1.56	0.80	3.10	13.72	8.00	5.06	1.32
	V ₁₇ S ₂	26.16	0.051	5.45	3.50	0.60	8.40	18.45	6.50	16.25	1.56
	V ₁₇ S ₃	22.88	0.064	5.67	3.90	1.30	4.40	16.57	3.40	5.62	1.67
Heeladahalli	V ₁₈ S ₁	28.26	0.041	4.56	3.25	0.60	7.80	18.00	7.63	14.20	0.19
	V ₁₈ S ₂	31.85	0.055	5.40	2.30	0.80	4.67	21.45	7.50	13.22	0.60
	V ₁₈ S ₃	22.45	0.064	3.20	1.90	1.20	8.60	15.46	3.20	10.93	0.50
Hirebidari	V ₁₉ S ₁	34.78	0.069	7.20	2.40	1.00	6.80	30.56	3.29	9.33	0.12
	V ₁₉ S ₂	28.18	0.032	4.67	2.47	0.56	7.34	14.64	4.60	22.03	0.42
	V ₁₉ S ₃	26.02	0.054	5.67	2.80	0.40	2.00	24.67	5.60	14.20	0.23
Honnatti	V ₂₀ S ₁	32.6	0.035	2.00	1.60	0.60	9.20	22.45	5.16	22.33	0.09
	V ₂₀ S ₂	26.56	0.065	6.45	3.45	0.45	5.60	24.64	3.20	19.22	0.24
	V ₂₀ S ₃	30.12	0.065	3.80	2.30	0.90	3.67	24.56	5.60	12.33	0.34
Hullikatti	V ₂₁ S ₁	30.43	0.069	9.20	3.50	1.20	6.80	27.60	7.04	5.30	0.32
	V ₂₁ S ₂	27.14	0.095	2.00	1.40	0.80	5.20	18.45	3.50	11.25	0.40
	V ₂₁ S ₃	22.78	0.055	3.51	2.60	1.13	6.60	14.56	6.98	19.99	0.56

Contd.....

Village	Sample No.	Cations (mmol L ⁻¹)				Anions (mmol L ⁻¹)				mg L ⁻¹	
		Na ⁺	K ⁺	Ca ²⁺	Mg ²⁺	CO ₃ ²⁻	HCO ³⁻	Cl ⁻	SO ₄ ²⁻	NO ₃ ⁻	B
Hullatti	V ₂₂ S ₁	31.59	0.074	7.20	2.20	1.00	9.40	28.98	4.60	7.80	0.23
	V ₂₂ S ₂	31.78	0.065	6.40	2.20	0.40	8.76	29.00	1.99	12.22	1.30
	V ₂₂ S ₃	28.61	0.065	5.00	2.60	0.80	3.80	23.20	3.50	12.33	0.65
Hunashikatti	V ₂₃ S ₁	32.9	0.069	9.20	4.00	0.20	12.20	27.78	8.05	8.34	1.20
	V ₂₃ S ₂	18.98	0.076	3.56	1.24	0.20	4.32	14.00	3.56	14.22	0.59
	V ₂₃ S ₃	28.98	0.042	3.90	2.10	0.43	8.40	15.89	4.30	21.29	1.20
Kajjari	V ₂₄ S ₁	33.69	0.011	5.57	3.20	2.00	9.10	29.56	4.67	20.60	2.35
	V ₂₄ S ₂	28.08	0.074	5.76	3.56	0.40	9.40	24.00	3.30	16.39	1.20
	V ₂₄ S ₃	32.7	0.065	4.40	2.56	0.89	7.00	26.98	5.20	6.03	0.13
Kakol	V ₂₅ S ₁	18.98	0.018	5.40	2.30	0.70	8.20	12.77	4.20	12.21	0.10
	V ₂₅ S ₂	15.78	0.065	5.70	3.50	0.45	7.60	14.00	3.20	18.58	0.45
	V ₂₅ S ₃	28.37	0.078	5.80	2.10	1.20	6.98	22.00	5.20	12.99	0.45
Kamadod	V ₂₆ S ₁	25	0.074	7.40	4.12	0.80	7.30	15.00	8.38	12.22	0.60
	V ₂₆ S ₂	26.89	0.075	2.20	1.30	0.90	2.40	15.00	6.20	14.83	0.20



Village	Sample No.	Cations (mmol L ⁻¹)				Anions (mmol L ⁻¹)				mg L ⁻¹	
		Na ⁺	K ⁺	Ca ²⁺	Mg ²⁺	CO ₃ ²⁻	HCO ³⁻	Cl ⁻	SO ₄ ²⁻	NO ₃ ⁻	B
Karur	V ₂₆ S ₃	29.34	0.065	2.44	1.50	0.20	8.20	21.00	4.63	14.30	0.52
	V ₂₇ S ₁	25.78	0.079	7.56	2.56	0.40	8.40	8.00	12.61	13.88	0.37
	V ₂₇ S ₂	27.89	0.065	2.23	1.80	1.20	7.00	18.00	6.50	23.37	0.42
Konanatambigi	V ₂₇ S ₃	27.48	0.075	5.67	2.40	0.19	2.00	26.00	4.60	10.53	0.22
	V ₂₈ S ₁	19.54	0.012	4.70	3.30	1.20	9.80	15.00	3.56	4.36	0.55
	V ₂₈ S ₂	23.85	0.056	2.50	1.30	0.60	4.60	21.67	4.67	4.33	0.13
Kudrihal	V ₂₈ S ₃	39.95	0.045	3.40	2.10	0.40	4.00	32.80	4.30	8.64	0.44
	V ₂₉ S ₁	25.78	0.015	2.10	1.20	0.80	6.80	18.00	2.11	2.42	0.54
	V ₂₉ S ₂	38.19	0.064	3.90	2.34	0.40	5.40	30.11	6.30	6.39	0.30
Kunabev	V ₂₉ S ₃	20.05	0.085	4.11	3.10	0.90	5.00	16.00	5.30	3.03	0.20
	V ₃₀ S ₁	34.04	0.046	3.00	1.80	0.80	6.78	21.11	8.96	25.39	0.35
	V ₃₀ S ₂	14.89	0.024	3.87	2.68	1.20	4.76	13.87	3.21	13.37	0.26
Maidur	V ₃₀ S ₃	25.98	0.055	4.20	2.90	0.20	8.60	16.78	3.20	15.00	0.05
	V ₃₁ S ₁	28.98	0.033	4.20	1.43	0.20	9.60	19.00	4.20	16.36	0.56
	V ₃₁ S ₂	16.76	0.064	1.98	0.90	0.80	5.00	12.12	2.30	16.92	0.47
Medleri	V ₃₁ S ₃	24.67	0.054	6.70	3.00	0.80	8.20	20.60	5.30	24.36	0.44
	V ₃₂ S ₁	21.73	0.082	6.00	2.12	1.10	6.80	17.89	5.87	12.30	0.66
	V ₃₂ S ₂	23.85	0.064	4.10	2.40	1.20	7.00	19.89	3.20	26.54	0.73
	V ₃₂ S ₃	10.12	0.012	4.01	2.00	0.30	5.21	10.54	2.30	15.53	0.44

Contd.....

Village	Sample No.	Cations (mmol L ⁻¹)				Anions (mmol L ⁻¹)				mg L ⁻¹	
		Na ⁺	K ⁺	Ca ²⁺	Mg ²⁺	CO ₃ ²⁻	HCO ³⁻	Cl ⁻	SO ₄ ²⁻	NO ₃ ⁻	B
Nadiharalalli	V ₃₃ S ₁	22.09	0.035	3.20	2.13	0.40	4.30	16.40	5.43	22.30	0.55
	V ₃₃ S ₂	30.14	0.021	3.90	1.30	0.20	6.00	22.00	5.30	5.96	0.87
	V ₃₃ S ₃	11.56	0.012	4.80	2.01	0.30	4.00	12.00	2.23	5.32	0.73
Nalawagala	V ₃₄ S ₁	29.95	0.046	2.12	1.30	0.60	9.02	14.00	5.64	16.36	0.50
	V ₃₄ S ₂	20.98	0.064	3.70	2.40	0.10	4.80	16.50	5.30	12.35	0.46
	V ₃₄ S ₃	10.82	0.025	7.30	3.10	0.20	3.67	12.00	4.30	11.36	0.32
Nukapur	V ₃₅ S ₁	33.95	0.066	6.11	2.90	0.60	9.78	22.00	8.27	16.36	0.35
	V ₃₅ S ₂	23.78	0.054	4.67	3.00	0.65	5.80	14.78	6.20	10.04	0.45
	V ₃₅ S ₃	32.05	0.069	5.30	2.80	1.20	6.87	26.87	5.30	25.65	0.70
Padmavathipur	V ₃₆ S ₁	28.26	0.033	5.80	3.20	1.09	8.10	19.67	4.20	21.36	0.55
	V ₃₆ S ₂	12.98	0.058	4.50	3.30	0.40	0.80	15.87	6.30	13.31	0.33
	V ₃₆ S ₃	27.98	0.024	3.89	2.20	1.20	7.20	22.65	4.20	20.21	0.37
Rahutanakatti	V ₃₇ S ₁	27.17	0.043	4.67	3.40	0.60	5.60	21.02	4.36	9.31	0.23
	V ₃₇ S ₂	26.78	0.098	4.80	2.00	0.60	6.40	22.45	2.30	11.34	0.29
	V ₃₇ S ₃	33.87	0.056	7.80	3.10	0.89	8.80	27.21	6.20	20.32	0.37
Ramapur	V ₃₈ S ₁	32.6	0.048	2.80	1.20	0.20	5.60	30.00	9.82	19.34	0.65
	V ₃₈ S ₂	24.88	0.045	5.50	2.13	0.50	6.20	17.80	5.30	23.31	0.33
	V ₃₈ S ₃	32.07	0.065	4.60	2.00	0.90	2.43	22.00	3.70	19.00	0.57
Ranebennur	V ₃₉ S ₁	44.70	0.084	13.45	6.90	0.88	8.78	38.00	9.34	12.89	0.47
	V ₃₉ S ₂	33.81	0.065	5.97	5.97	0.78	7.98	26.02	6.30	6.98	0.34
	V ₃₉ S ₃	37.07	0.075	6.70	3.10	0.20	9.20	34.40	2.30	20.45	0.27
Shidaganahal	V ₄₀ S ₁	28.76	0.053	5.67	2.80	0.40	9.43	20.02	3.39	13.24	0.34
	V ₄₀ S ₂	32.87	0.054	5.07	2.34	0.20	8.87	19.09	7.89	19.00	0.77
	V ₄₀ S ₃	22.89	0.046	6.00	3.09	0.21	6.20	18.89	5.60	22.89	0.87
Shrinivasapur	V ₄₁ S ₁	31.52	0.066	5.67	2.70	0.40	9.32	28.09	1.62	19.34	0.73
	V ₄₁ S ₂	17.89	0.070	4.54	2.12	0.76	6.92	11.09	3.01	8.64	0.55
	V ₄₁ S ₃	18.89	0.046	2.80	1.14	0.20	6.00	13.00	3.00	17.42	0.44
Somlapur	V ₄₂ S ₁	28.26	0.094	4.10	2.45	0.60	8.40	18.00	8.16	2.89	0.37



Village	Sample No.	Cations (mmol L ⁻¹)				Anions (mmol L ⁻¹)				mg L ⁻¹	
		Na ⁺	K ⁺	Ca ²⁺	Mg ²⁺	CO ₃ ⁻²	HCO ⁻³	Cl ⁻¹	SO ₄ ²⁻	NO ₃ ⁻	B
	V ₄₂ S ₂	23.87	0.043	2.06	1.09	0.80	8.02	15.09	3.20	3.45	0.33
	V ₄₂ S ₃	12.45	0.098	2.45	1.89	0.32	4.65	9.09	2.34	14.24	0.47

Contd.....

Village	Sample No.	Cations (mmol L ⁻¹)				Anions (mmol L ⁻¹)				mg L ⁻¹	
		Na ⁺	K ⁺	Ca ²⁺	Mg ²⁺	CO ₃ ⁻²	HCO ⁻³	Cl ⁻¹	SO ₄ ²⁻	NO ₃ ⁻	B
Udagatti	V ₄₃ S ₁	16.08	0.033	5.40	2.00	0.60	7.10	9.43	3.56	3.31	0.70
	V ₄₃ S ₂	27.65	0.063	2.06	0.90	0.20	5.20	16.40	5.45	3.36	0.55
	V ₄₃ S ₃	21.1	0.023	6.70	3.00	0.20	7.89	19.00	3.30	7.33	0.65
Venkatapur	V ₄₄ S ₁	25.98	0.018	3.50	2.40	0.12	8.10	16.00	5.00	19.00	1.40
	V ₄₄ S ₂	13.99	0.090	5.70	2.55	0.40	6.45	12.33	3.43	13.90	0.39
	V ₄₄ S ₃	19.93	0.075	3.23	2.34	0.20	7.20	11.00	5.68	15.53	1.26
Waderayana halli	V ₄₅ S ₁	26.00	0.059	4.67	3.23	0.60	9.20	13.45	9.13	22.30	0.65
	V ₄₅ S ₂	12.08	0.084	5.55	3.54	0.40	6.80	12.40	2.43	14.96	1.20
	V ₄₅ S ₃	12.78	0.125	3.90	2.12	1.20	8.20	9.00	3.00	15.32	0.13
Yakalasapur	V ₄₆ S ₁	41.3	0.069	8.40	4.67	0.40	7.00	33.45	6.50	25.53	0.65
	V ₄₆ S ₂	22.45	0.038	4.56	2.66	0.50	5.80	16.50	3.43	22.30	0.65
	V ₄₆ S ₃	27.65	0.044	5.40	2.32	0.90	6.00	14.03	8.70	14.96	0.35
Yallapur T medleri	V ₄₇ S ₁	26.08	0.170	6.20	2.56	0.60	5.40	17.87	7.14	24.30	0.56
	V ₄₇ S ₂	26.78	0.040	4.00	1.89	0.20	5.65	21.34	6.39	9.34	0.49
	V ₄₇ S ₃	26.76	0.094	3.56	1.45	0.30	7.23	26.45	1.48	23.31	0.34
Yattinahalli	V ₄₈ S ₁	30.08	0.010	2.45	1.08	0.40	8.20	17.87	5.43	11.24	0.60
	V ₄₈ S ₂	28.78	0.364	3.50	2.00	0.40	8.10	15.00	5.20	9.34	0.50
	V ₄₈ S ₃	26.45	0.024	3.80	1.87	1.12	9.40	15.45	4.04	5.61	0.15
Yellapur T honnatti	V ₄₉ S ₁	18.47	0.079	5.67	3.12	0.60	7.70	11.00	5.59	21.64	0.46
	V ₄₉ S ₂	15.67	0.069	3.50	2.14	0.50	4.97	10.23	2.23	10.54	0.23
	V ₄₉ S ₃	19.87	0.088	4.34	2.34	0.22	5.40	14.03	8.70	11.39	0.09
Yennihosahalli	V ₅₀ S ₁	21.31	0.061	4.42	2.13	0.40	8.60	14.35	2.21	11.24	0.52
	V ₅₀ S ₂	19.32	0.064	2.70	1.12	0.20	5.18	16.50	3.43	9.34	0.16
	V ₅₀ S ₃	31.88	0.027	4.80	2.10	0.30	4.48	14.99	8.40	13.01	0.40
Minimum		10.12	0.010	1.40	0.78	0.10	0.80	8.00	1.48	2.12	0.05
Maximum		44.70	0.360	13.45	6.90	2.10	12.20	38.00	12.61	26.54	2.35
Mean		26.04	0.060	5.00	2.56	0.59	6.86	19.84	5.00	13.26	0.57
SD		6.73	0.030	2.02	1.00	0.37	2.05	6.56	2.03	6.04	0.40
C.V		25.87	64.630	40.46	38.97	62.24	29.93	33.08	40.57	45.53	70.32



POLITICS AND POLICY MAKING: A COMPREHENSIVE STUDY OF BJP PARTY

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Abstract: *Politics is the way that people living in groups make decisions. Politics is about making agreements between people so that they can live together in groups such as tribes, cities, or countries. Good politics is means of decision making without harming others in the process. To harness its power: Analyze the organization chart. It is incredible to separate policymaking from politics. Policy is a law, regulation, procedure, administrative action, incentive, or voluntary practice of governments and other institutions. Public policy signifies to the actions taken by government its decisions that are intended to solve problems and improve the quality of life for its citizens. Henceforth, the present study focused on political system, role of political parties, dynamics of political decisions of BJP government in India towards all sections of community and its impacts on the growth and development of a country. This paper aims to explore politics and policy making effects on the growth and development of country. The present study is descriptive research in nature and the relevant data been gathered from secondary source of information. The study concluded that the politics of BJP party and its policies are widely accepted by Majority of Hisndus but not all.*

Key Words: *Politics, Policy, Politics and Policy making by BJP Government.*

INTRODUCTION:

Politics involves making common decisions for a group of people. It is the activity by which differing interests within a given unit of rule are conciliated by giving them a share in power in proportion to their importance to the welfare and survival of the whole community. Politics is the activity through which people make, preserve and amend the general rules under which they live. Thus, impossible to separate policymaking from politics. Many groups with different interests and their own agendas are involved in all stages of policymaking. The separation of powers, checks and balances, and federalism mean there is no one institution responsible for making policy. Public policy is an institutionalized proposal to solve relevant and real-world problems, guided by a conception and implemented by programs as a course of action created and/or enacted, typically by a government or non-profit organisation, in response to social issues.

REVIEW OF THE LITERATURE:

Mudasir Hamid and Dr.S.K.Srivastav(2018)¹: the authors reveals that through driving the NDA government, the BJP made patterns that had been normalizing preceding 1998 and mainstreamed them in Indian residential legislative issues. The focused on Hindu Nationalism, Hindutva, Norms, Values, and Indian Politic. **Diego Maiorano, Ronojoy and Sen J. V. (2020)²,** focused on BJP party system in Indian politics. In the 2019 Indian general election, the Bharatiya Janata Party (BJP) returned to power with a larger mandate than in 2014. The party expanded its electoral reach in rural and 'urban' areas and brought in new voters, 65 per cent of whom belonged to the OBCs, SCs and STs, groups which had traditionally not voted for the BJP. It also made inroads into new areas like Odisha and West Bengal. **Dr. Gopal Parshad(2018)³,** The ideological differences also exist in social sphere with some political factions

¹Mudasir Hamid and Dr.S.K.Srivastav, BJP Led NDA and Indian Politics, International Journal of Research, Vol-05(4), Pg- 3453-3480, February 2018.

²Diego Maiorano, Ronojoy and Sen J. V. (2020), Is There a 'BJP System' in Indian Politics?, published by Institute of South Asian Studies, Issue No. 10, Singapore.

³Dr. Gopal Parshad, Ideology of Bharatiya Janata Party, International Journal of Humanities and Social Science Invention, Vol-7(3) Ver. V, PP.25-31, March. 2018.



swearing by Hindu nationalism and the rest seem quite content with progressive westernization. The paper depicts that the Bharatiya Janata Party (BJP), expressing full faith in Hindu nationalism, socialism, secularism, integral humanism and democracy, lays emphasis on nationalism based on cultural and civilizational ethos. **Chris Ogden (2012)**⁴, the Bharatiya Janata Party (BJP)-led National Democratic Alliance (NDA) government influenced India's domestic politics from 1998 to 2004. It argues that the core norms constituting the BJP's ideological basis precipitated lasting changes in the nature and functioning of India's domestic politics. **Nair, P. (2009)**⁵, the paper stressed on the religious forces that attempt to gain political power may establish political parties, often leading to conflicts in states based on secular principles, such as India.

Need for the study:

Politics and Public Policy is the scientific study of the politics of institutions, structures, and organizations. The study of policy and politics focuses on the analysis and explanation of government and non-government responses to issues, problems and challenges which affect the national growth. Henceforth, the study needed to understand how BJP government framed various policies based on social problem or agenda for seeking power. This paper examines the relationships between the BJP's politics and policy in order to obtain a better insight into the BJP's role in furthering RSS's Hindutva agenda.

Objectives:

- To investigate the politics of BJP towards national development.
- To study the relation of politics and policy making of BJP's party.

METHODOLOGY:

The present study is a descriptive and qualitative research in nature. The present study comprises secondary data for understanding of politics and policy making process of BJP's party in India. The study also consists factors influence on decision making and its significance.

Policy and Politics: Politics can be defined as a science or art of governing or government, especially governing a political entity like a nation. A policy can be defined as an overall plan that embraces the general goals. *Policy* is a set of rules or principles that guide decisions. Policies are the outputs of the political system; they come along in different forms, including laws, regulations, or rules. Policies are (1) distributive policies, (2) redistributive policies (3) regulatory policies, and (4) constituent policies. This politics perspective involves scrutinizing the roles of the executive and legislative branches of government. Moreover, it implies the employment of sophisticated theories of decision-making and the exploration of policy-making structures for understanding how besides political and institutional forces, social and economic interests shape the content of policies. **India's religious composition** are the Hinduism: 966.3 million-79.8%, Islam: 172.2 million-14.2%, Christians: 27.8 million-2.3%, Sikhs: 20.8 million-1.7% and Others (Buddhist, Jains etc.)-2%. Hence, the BJP party focused more on Hindutva and Hinduism.

Bharatiya Janata Party:

The BJP's origin lies in the Bharatiya Jana Sangh, formed in 1951 by Shyama Prasad Mukherjee. After the State of Emergency in 1977, the Jana Sangh merged with several other parties to form the Janata Party; it defeated the incumbent Congress party in the 1977 general election. After three years in power, the Janata party dissolved in 1980 with the members of the erstwhile Jana Sangh reconvening to form the BJP. Although initially unsuccessful, winning only two seats in the 1984 general election, it grew in strength on the back of the Ram Janmabhoomi movement. Following victories in several state elections and better performances in national elections, the BJP became the largest party in the parliament in 1996; however, it lacked a majority in the lower house of Parliament, and its government, under its then leader Atal Bihari Vajpayee lasted only 13 days.

After the 1998 general election, the BJP-led coalition known as the National Democratic Alliance (NDA) under Prime Minister Atal Bihari Vajpayee formed a government that lasted for a year. Following fresh elections, the NDA government, again headed by Vajpayee, lasted for a full term in office; this was the first non-Congress government to do so. In the 2004 general election, the NDA suffered an unexpected defeat, and for the next ten years the BJP was the

⁴Chris Ogden, A Lasting Legacy: The BJP-led National Democratic Alliance and India's Politics, Journal of Contemporary Asia, Vol. 42(1), pp. 22-38, February 2012.

⁵Nair, P., Religious Political Parties and their Welfare Work: Relations between the RSS, the Bharatiya Janata Party and the Vidya Bharati schools in India, Birmingham: Religions and Development, Working Paper-37, 2009.



principal opposition party. Long-time Gujarat Chief Minister Narendra Modi led it to a landslide victory in the 2014 general election. Since that election, Modi has led the NDA government as Prime Minister and as of April 2022, the alliance governs 18 states. The Conservatism, Neoliberalism, Right-wing populism, Nationalism, Hindutva and Integral humanism.

Ideology and political positions of BJP Party:

- Social policies and Hindutva
- Economic policies
- Defence and counterterrorism
- Foreign policy

Politics and Policy of BJP's Party in India:

The official ideology of the BJP is integral humanism, first formulated by DeendayalUpadhyaya in 1965. The party expresses a commitment to Hindutva, and its policy has historically reflected Hindu nationalist positions. The BJP advocates social conservatism and a foreign policy centred on nationalist principles. Recent popular policies made by the BJP government such as Pradhan Mantri Jan DhanYojana, Jan Dhan to Jan Suraksha, Pradhan MantriJeevanJyotiBimaYojana, Pradhan MantriSuraksha BimaYojana, Atal Pension Yojana, Pradhan Mantri Mudra Yojana, Stand Up India Scheme, Pradhan MantriVayaVandanaYojana, etc.

1. **Social policies and Hindutva:** The official philosophy of the BJP is "Integral humanism," a philosophy first formulated by DeendayalUpadhyaya in 1965, who described it as advocating an "indigenous economic model that puts the human being at center stage. The BJP's Hindutva ideology has been reflected in many of its government policies.
2. **Economic policies**
 - The BJP's economic policy has changed considerably since its founding. There is a significant range of economic ideologies within the party. In the 1980s, like the Jana Sangh, it reflected the thinking of the RSS and its affiliates.
 - It supported swadeshi and a protectionist export policy. However, it supported internal economic liberalisation, and opposed the state driven industrialisation favoured by the Congress.
 - The two NDA governments in the period 1998–2004 introduced significant deregulation and privatisation of government-owned enterprises. It also introduced tariff-reducing measures.
 - This shift in the economic policies of the BJP was also visible in state governments, especially in Gujarat, where the BJP held power for 16 years.^[141] Modi's government, in power from 2002 to 2014, followed a strongly neo-liberal agenda, presented as a drive towards development.
 - Its policies have included extensive privatisation of infrastructure and services, as well as a significant rollback of labour and environmental regulations.
 - Modi has been described as taking a more economically populist approach on healthcare and agricultural policy.
 - Modi's government has also been described as taking a more protectionist turn on international trade during his second term, withdrawing from the Regional Comprehensive Economic Partnership talks. Introducing the 2020 Atmanirbhar Bharat economic plan, which emphasises national self-sufficiency.
3. **Defence and counterterrorism:**
 - Compared to Congress, the BJP takes a more aggressive and nationalistic position on defence policy and terrorism. The Vajpayee-led NDA government carried out nuclear weapons tests and enacted the Prevention of Terrorism Act, which later came under heavy criticism. It also deployed troops to evict infiltrators from Kargil, and supported the United States War on Terror.
 - They were seen as an attempt to display India's military prowess to the world, and a reflection of anti-Pakistan sentiment within the BJP.
 - The Modi government has conducted several strikes on territory controlled by neighbouring countries on counterterrorism grounds. This included a 2015 Indian counter-insurgency operation in Myanmar against the National Socialist Council of Nagaland, the 2016 Indian Line of Control strike in Pakistan-administered Kashmir, and the 2019 Balakot airstrike in Pakistan. It also militarily intervened in defence of Bhutan during the 2017 Doklam standoff with China.
4. **Foreign policy:**



- The historical stance of the BJP towards foreign policy, like the Bharatiya Jana Sangh, was based on an aggressive Hindu nationalism combined with economic protectionism. The Bharatiya Jana Sangh was founded with the explicit aim of reversing the partition of India; as a result, its official position was that the existence of Pakistan was illegitimate. This antagonism toward Pakistan remains a significant influence on the BJP's ideology.
- During the Cold War, the party and its affiliates strongly opposed India's long standing policy of non-alignment, and instead advocated closeness to the United States.
- The Vajpayee government's foreign policy in many ways represented a radical shift from BJP orthodoxy while maintaining some aspects of it.
- Vajpayee signed the Lahore Declaration, which was an attempt to improve Indo-Pakistani relations that deteriorated after the 1998 nuclear tests.
- The Modi government initially took a pragmatic stance towards Pakistan, attempting to improve relations with Nawaz Sharif's government, culminating in Modi visiting Pakistan in 2015.
- In 2015, the Modi government was accused by the Nepalese government of imposing an undeclared blockade on Nepal.
- Relations subsequently deteriorated, particularly after Sharif was ousted in 2017.

RESULT OF THE STUDY:

- BJP is one of two major political parties in India, along with the Indian National Congress. It has been the ruling political party of the Republic of India since 2014 under its prime minister, Narendra Modi. The BJP is a right-wing party, and its policy has historically reflected Hindu nationalist positions.
- Ideological conflict in Indian party politics: it is necessary to first dispel with some conventional wisdom about how the country's political arena operates.
- Buffeted by opposition to her party's stances on both statism and recognition, the Indira Gandhi led Congress Party decided to move in the direction of greater statism to keep its opponents at bay.
- The BJP has been singularly successful in ushering in a majoritarian discourse and getting most political parties to accept it.
- The BJP-led NDA period, the core norms underpinning the BJP's Hindutva ideology competed with, and at times successfully challenged, the normative structure of domestic politics.

CONCLUSION:

Political decision making is one of the most important research domains in political psychology, and rational choice theory is the most commonly used. When political parties seek to expand their reach, they often develop contradictory tendencies. If these contradictions are not adequately managed, they can become a key source of organizational degeneration. Can the BJP finesse its coalition's emerging tensions? Since coming to power in 2014, the BJP and the RSS have aggressively tried to shepherd India in a more conservative direction on questions of statism and recognition. But this approach is a perilous one. Indian electoral politics is undergoing a transformation from a single party (Congress) dominant electoral system to a multi-party system with no single dominant party. The electoral milieu is characterized by a symbiotic relationship between the two national parties and the regional parties.

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Measurement of radionuclides and Activity utilization index calculation in sediments samples

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Abstract: In the present study, the systematic measurement of activity concentration of ^{40}K , ^{226}Ra and ^{232}Th in sediment sample measured by using HpGe gamma ray spectrometer. The activity concentration of ^{40}K in the sediment ranges from 11.3 Bq kg^{-1} to 281 Bq kg^{-1} with a mean value of 207 Bq kg^{-1} and ^{226}Ra ranges from 30.7 Bq kg^{-1} to 113 Bq kg^{-1} with a mean value of 75.1 Bq kg^{-1} . The activity concentration of ^{232}Th ranges from 8.4 Bq kg^{-1} to 356 Bq kg^{-1} with a mean value of 85.5 Bq kg^{-1} . The assessed activity utilization index (AUI) associated with the radionuclides were calculated and compared with international recommended levels. Some samples shows significant results.

Key Words: Gamma dose rate, Cauvery River, Radium, construction materials.

INTRODUCTION:

The human population is exposed to a natural background radiation level that is contributed by cosmic rays, terrestrial radioactivity and internal radioactivity. The contribution from these components varies with location and altitude [1]. The most interesting of these natural radioactive series is the ^{238}U series which decays via a chain containing eight alpha decays and six beta decays to ^{206}Pb . This chain includes the longest-lived isotopes of radium and radon (^{226}Ra and ^{222}Rn). Radon is a case of an outcast element in nature because this element is the only gas in this uranium series. Radium is the first direct parent of radon, is a solid radioactive element and decays to radon emitting α -particles followed by γ -rays. However, the most important emanation of radon isotopes is ^{222}Rn (the true "radon"). The exposure of people to high concentrations of radon and its progenies for a long period in mines and phosphate factories causes pathological effects and functional respiratory changes and consequently the occurrence of lung cancer [2]. Therefore, the radionuclides concentrations and their distributions, and its associated dose rates in the river sediment should be monitored. With this aim, function of minerals in the natural radioactivity level of Cauvery river basin sediments has studied.

MATERIALS AND METHODS:

Sample collection and preparation

The sampling stations along River Cauvery are indicated in Fig 1. Sampling station K_1 corresponds to the upper reaches of the river and K_{14} corresponds to the lower reaches. The sediment samples from the river were collected following standard procedures (EML) [3] during the period of January-2014. The collected sediment samples were returned to the laboratory and oven dried at 110°C till dried weight is obtained. The dried sample were sieved through 250μ mesh, then stored and sealed in an 250 ml PVC container and kept for 30 day to secular equilibrium [4-5].

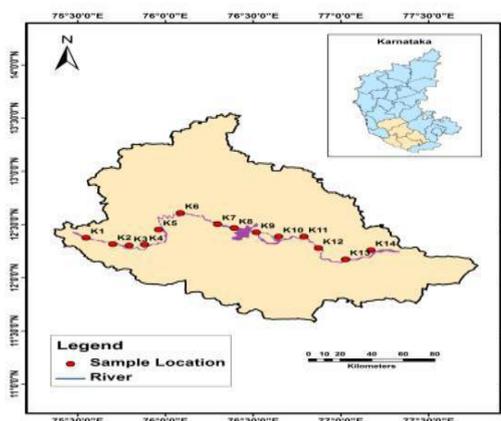


Figure 1. Cauvery river basin map

Activity measurement:

Using a high-resolution N-type HpGe (NGC 3019, DSG) detector gamma spectrometry system, the activity concentration of primordial radionuclides ²²⁶Ra, ²³²Th and ⁴⁰K in sediment samples was measured. The resolution of the detector was 1.9 KeV at 1.33 MeV energy and efficiency of the detector was 30%. It was shielded by 15cm thick lead on all four sides and 10cm thick on top. The output of the detector is analyzed using a 16K multi channel analyzer (MCA-3 series/P7882, FAST com tec). The concentrations of various radionuclides of interest were determined using the counting spectra of each sample. The peaks corresponding to 1.46MeV(⁴⁰K), 609.31keV(²¹⁴Bi) and 911.07keV(²²³Ac) were considered in evaluating the activity levels of ⁴⁰K, ²²⁶Ra series and ²³²Th series respectively [6-7].

RESULTS AND DISCUSSIONS:

Activity concentration of ²²⁶Ra, ²³²Th and ⁴⁰K

The activity concentration of ⁴⁰K, ²²⁶Ra and ²³²Th in the Cauvery River sediment is presented in Table 1. The activity concentration of ⁴⁰K in the sediment ranges from 11.3 Bq kg⁻¹ to 281 Bq kg⁻¹ with a mean value of 207 Bq kg⁻¹ and ²²⁶Ra ranges from 30.7 Bq kg⁻¹ to 113 Bq kg⁻¹ with a mean value of 75.1 Bq kg⁻¹. The activity concentration of ²³²Th ranges from 8.4 Bq kg⁻¹ to 356 Bq kg⁻¹ with a mean value of 85.5 Bq kg⁻¹. The measured activity concentration of the radionuclides varied from location to location. There is no plausible increasing or decreasing trend in activity concentration. These variations are due to the variation in drainage pattern of the study area, which could be attributed to the physical and chemical sorting processes from location to location. Human activities and natural process also contribute to the variations. The variation of activity concentration is high due to the leaching of soil bearing minerals and weathering of rocks in the river catchment area. The river basin contains Archean granitoid gneisses (amphibolite-facies) and intrusive, Closepet granite, Precambrian granulite, and supracrustal belts of rocks, volcanic rocks, felsic volcanic rocks, and caustic and chemical sedimentary rocks [9-11]. The correlation between ²²⁶Ra and ²³²Th were computed from the results of the activity of these radionuclides. In monsoon, the correlation exists between ²²⁶Ra and ²³²Th of Cauvery River sediment with correlation coefficient R = 0.946. The main objective of measuring radioactivity is to make an estimate of radiation dose likely to be delivered externally to the general public. The following equation was used to calculate the activity utilization index as shown in table 1, which ranges from 0.49 to 6. 24. Some samples show highly significant results.

Table.1. Activity of ²²⁶Ra, ²³²Th and ⁴⁰K in Cauvery river sediment samples

Sampling stations	Sediment Samples			AUI (I)
	⁴⁰ K (Bq kg ⁻¹)	²²⁶ Ra (Bq kg ⁻¹)	²³² T (Bq kg ⁻¹)	
K ₁	21.2±1.4	40.5±2.0	20.0±1.4	0.62
K ₂	56.8±2.3	74.0±2.7	70.2±2.6	1.54
K ₃	11.3±1.7	30.7±1.7	58.8±2.4	1.00
K ₄	106.8±3.2	58.8±2.4	20.3±1.4	0.80



K ₅	187.6±4.3	61.9±2.4	69.5±2.6	1.43
K ₆	196.8±4.4	63.5±2.5	101.4±3.1	1.83
K ₇	116.1±3.4	83.7±2.8	84.3±2.9	1.80
K ₈	281.9±5.3	55.9±2.3	55.4±2.3	1.21
K ₉	276.1±5.2	113.4±3.3	188.0±4.3	3.34
K ₁₀	331.4±5.7	67.3±2.5	48.5±2.2	1.24
K ₁₁	162.0±4.0	36.2±1.9	12.0±1.0	0.49
K ₁₂	205.4±4.5	46.7±2.1	8.4±0.9	0.55
K ₁₃	201.7±4.4	207.7±4.5	356.4±5.9	6.24
K ₁₄	746.8±8.6	110.7±33.3	103.5±3.2	2.34
Mean	207.3	75.1	85.5	1.74

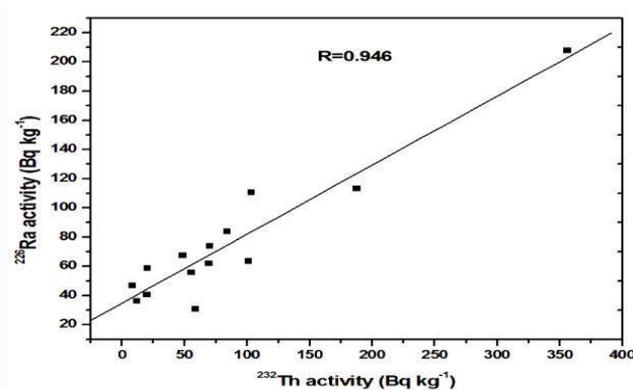


Figure 2. Correlation between ²²⁶Ra and ²³²Th in sediments of Cauvery in monsoon

Activity Utilization Index(i)

Since river sediments are used as building construction materials, the presents sediments are also examined whether they can be used as building materials or not. Activity utilization index(I) has been calculated for this reason using the following equation.

$$I = (C_{Ra}/50)f_{Ra} + (C_{Th}/50)f_{Th} + (C_K/500)f_K$$

where, C_{Ra}, C_{Th} and C_K are the mean activity concentrations of ²²⁶Ra, ²³²Th and ⁴⁰K in Bq kg⁻¹ in sediments and f_{Ra}, f_{Th} and f_K are the fractional contributions to the total dose rate of ²²⁶Ra, ²³²Th and ⁴⁰K respectively.

CONCLUSIONS:

The activity concentration of ²²⁶Ra, ²³²Th and ⁴⁰K in Cauvery river sediment samples were measured by using HpGe Gamma ray spectroscopy. The measured activity concentrations of ²²⁶Ra, ²³²Th and ⁴⁰K in this study were found to be lower than the world average value. The activity index(AUI) values associated with the radionuclides were calculated and compared with international recommended values. Few samples show highly significant results. That particular location sediment is not suitable to use for construction purpose.

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Structural and thermal properties of SF Bio-Nanocomposite Thin Films

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Abstract: In this work *Bombyx mori* silk fibroin (SF) films were prepared by solution casting method. The protein biopolymer films were carried out in dry air at room temperature. The unirradiated and irradiated films were characterized by X-ray diffractogram (XRD), thermogravimetric analysis (TGA). Silver nanoparticles (AgNPs) were synthesized in situ under gamma radiation environment at room temperature using aqueous silk fibroin (SF) solution obtained from *Bombyx mori* silk. The formation of the AgNPs was confirmed by its characteristic surface plasmon resonance (SPR) band at around 424 nm in UV-visible spectra. The transmission electron microscopy (TEM) images showed that the formed nanoparticles are roughly spherical in shape. The size of the AgNPs can be tuned by controlling the radiation dose.

Key Words: silk fibroin (SF) films, AgNPs, XRD, TGA, SPR, TEM.

INTRODUCTION :

Silk is a natural fiber and semicrystalline biopolymer. *Bombyx mori* silk contains a fibrous protein termed fibroin (both heavy and light chains) that form the thread core and glue-like proteins termed sericin that surround the fibroin fibers to cement them together. The fibroin is an insoluble protein containing up to 90% of the amino acids glycine, alanine, and serine leading to significant content of antiparallel β -pleated sheet formation in the fibers [1]. Recent interest in the use of reprocessed silks such as fibroin in biotechnological materials and in biomedical applications originate from the unique mechanical properties of the silk fibers as well as their biodegradability and biocompatibility [2]. In recent years noble metal nanoparticles synthesis has attracted much attention of many researchers. The development of clean synthetic procedures for the synthesis of metal nanoparticles have been the area of focused researches due to their interesting catalytic, optical, electrical, and magnetic properties [3]. The metal nanoparticles, therefore, have potential uses in technological applications. Silver is a nontoxic inorganic material well known for possessing an inhibiting effect towards 650 types of microbes growth [4]. Silver exhibits the highest electrical and thermal conductivities among all the metals. A quite large number of methods are available for synthesis of silver nanoparticles for example, chemical reduction, sol gel, hydrothermal, electrochemical synthesis, thermal decomposition, sonochemical, photo reduction in reverse micelles, bacterial synthesis and microwave irradiation method [5]. All the above listed methods used for the synthesis of nanoparticles, involve the usage of environmentally toxic or biologically hazardous chemicals as reducing agent. Therefore for an environmental sustenance, the development of clean, eco-friendly, green route approach for synthesis of silver nanoparticles is very much needed. More recently many researchers were well documented/demonstrated the bio or green route (Irradiation with high energy radiations) synthesis of silver nanoparticles [6]. In the present work we introduced a simple, effective and environmentally friendly method for in situ preparation of silver nanoparticles using silk fibroin and silk fibroin films at room temperature under gamma radiation environment. Since the silk fibroin extracted from *Bombyx mori* silk, a protein polymer, which is naturally abundant, nontoxic and biocompatible material, are introduced for AgNPs synthesis.

EXPERIMENTAL:

Preparation of Silk fibroin solution and gamma irradiation:

The *Bombyx mori* cocoons were cut into small pieces and then treated with boiling aqueous solution of 0.02M Na_2CO_3 to extract the glue like sericin protein and dried in hot air oven. The degummed silk solution. This silk fibroin solution was dialyzed in water using a dialysis cassette in order to remove salt. Finally obtained optically clear solution was centrifuged to remove the small amount of silk aggregates formed during the process. The prepared fibroin solution was transferred to Petri dish followed by drying in air at room temperature to form silk fibroin films. The thickness of the obtained films is 80 μm .



Preparation of SF-AgNPs solution and gamma irradiation:

Ten milligrams of AgNO_3 powders were added into 10 mL of 1 wt% SF solution (6 bottles) to form a transparent SF- AgNO_3 mixture solution. And then SF- AgNO_3 mixture solution was exposed to gamma radiation. The samples were irradiated in the dose ranging from 0-80 kGy in a step of 10 kGy.

CHARACTERIZATION:

The X-ray diffractograms (XRD) of the unirradiated and gamma irradiated silk fibroin films were recorded using Rigaku Miniflex-II, X-ray diffractometer with Ni filtered, $\text{CuK}\alpha$ radiation of wavelength $\lambda = 1.5406 \text{ \AA}$, with a graphite monochromator. The scattered beam was focused on a detector. The samples were scanned in the 2θ range 5-60° with a scanning speed and step size of 1°/min and 0.02° respectively.

The thermal analyses of the samples were carried out using TA instrument apparatus (Model No Q600-1399). Typical samples weighing 6-7 mg were used. The thermograms were obtained from the heating cycle run in a temperature range of room temperature to 600 °C at a constant heating rate of 20°C/min.

RESULTS AND DISCUSSIONS:

X-ray diffraction (XRD)

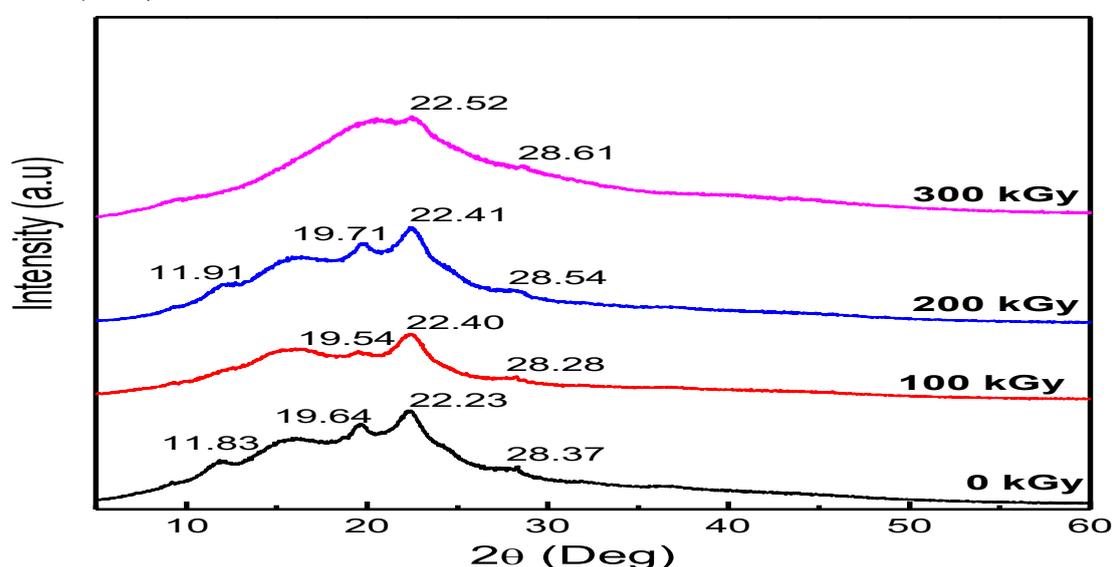


Figure 1. XRD spectra of unirradiated and gamma irradiated silk fibroin films.

The XRD pattern of unirradiated and irradiated silk fibroin films at different doses of radiation are shown in from Fig.1. The unirradiated SF shows four characteristic peaks at 11.83°, 19.64°, 22.23° and 28.37°, confirms the presence of random coil structure (Silk-I) and β - sheet (Silk-II) forms with predominantly random coil confirmation and the amorphous state [7]. The irradiated samples (100kGy, 200kGy) showed the characteristic peaks. As the radiation dose increased (300kGy) the random coil nature (peaks) disappears and show only the prominent peak at $2\theta=22.23^\circ$. Also the variation in the X-ray diffraction peaks and intensity was observed after gamma irradiation. It was found that the diffraction peaks were broadened as radiation dose increased. This may be due to formation of some small crystallites in the amorphous regions of SF film during irradiation. The full width at half maximum (FWHM) is generally associated with the crystallite size which can be obtained from Scherer's formula [8]. From the Table 1, it is very clear that the crystallite size (\AA) decreases with increasing radiation dosage. Irradiation of polymers mainly causes two important changes. 1) Degradation of the polymer, where in main chain scission takes place, which leads to low molecular weight polymer 2) Cross-linking which is chemical bonding between polymeric chains to form network polymers. Both of these affect the physical properties of polymer. Degradation of polymer leads to loss in mechanical strength, whereas cross-linking improves the physical properties. From the Table 1, it is evident that the crystallite size decreases as radiation dose increases. Normally the strength of the polymer irrespective of natural or man-made increases with increase in crystallite size [9]. This suggests that the gamma irradiation leads to degradation of the SF films.



Thermal Analysis:

The thermal behavior of the unirradiated and gamma irradiated silk fibroin films was examined by thermogravimetric analysis (TGA). The TGA thermograms of SF films before and after gamma irradiation are shown in Fig. 2. The thermograms of both the unirradiated and gamma irradiated silk fibroin films shows distinct regions of weight losses. For the unirradiated silk fibroin film first region, starting from room temperature up to 200°C the weight loss is due to water vaporization (drying). This weight change was not significant and the sample was thermally stable. In the second region from 200°C to 470°C the film experienced a great weight loss, because of the thermal decomposition. About 50% of the sample decomposed into volatiles [10]. The maximum degradation temperatures of SF films it is clear that degradation temperature of SF films was shifted to lower temperature. This indicates that gamma irradiated SF films are less thermally stable than unirradiated SF films.

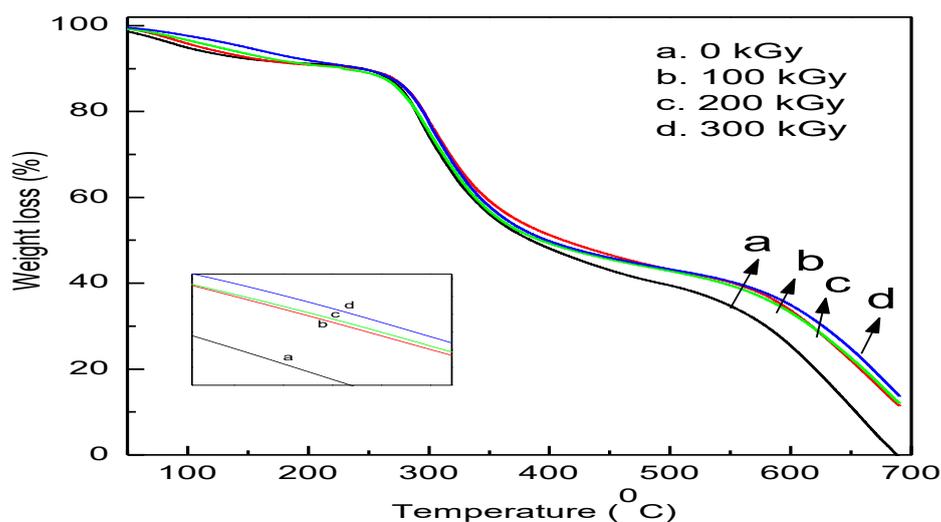


FIGURE 2. TGA spectra of unirradiated and gamma irradiated silk fibroin films.

CONCLUSION:

In this study, silver nanoparticles were synthesized by an eco-friendly bio based green route method. *Bombyx morisilk* fibroin has acted as a reducing and stabilizing agent for the synthesis of silver nitrate into silver nanoparticles under gamma radiation environment. Synthesized silver nanoparticles were characterized by XRD and DSC/TGA.

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Effect of tamarind seed powder on the performance of castor oil based polyurethane green composite

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Abstract: The use of natural filler filled polyurethane (PU) green composites is becoming increasingly popular in the present days. This demand is due to the increase in the use of ecofriendly, biodegradable and sustainable materials to produce polyurethane composites. This present work discusses the preparation, and mechanical properties of the tamarind seed powder (TSP) based polyurethane green composites. A series of samples 2.5, 5, 7.5 and 10 wt% of TSP filled PUs were prepared and analyzed by FTIR for the formation of urethane linkage and hydrogen bond formation in TSP/PU matrix. Its mechanical properties such as tensile strength and surface hardness are studied. Improvement of tensile strength was noticed upto 7.5 wt% of TSP filled PU green composite. The microcrystalline parameters such as crystal size ($\langle N \rangle$) and lattice strain have been computed using wide angle X-ray scattering data. The structure-property relationship of the TSP/PU green composites has been established on the basis of these parameters.

Key Words: Tamarind seed powder, polyurethane, green composites, tensile strength, wide angle, X-ray scattering studies.

INTRODUCTION:

An emergent need of time in material preparation is to shift the pressure from fossil reserves to natural and renewable resources. The biodegradable polyurethanes by incorporating biodegradable moiety is promising to enhance the polyurethanes efficiency (1,2). Currently the modern world is facing a serious challenge of environmental pollution. The increasing demand for a clean environment has led to the use of natural resources to develop innovative green materials (3). This has therefore prompted the polyurethane industry to develop composite from renewable materials especially polyols from both edible and non-edible plant oils (4) and as well as using natural fillers (5). The use of these eco-friendly sustainable materials effectively contributes to the reduction of the release of greenhouse gases, promotes environmental sustainability, conservation and provides a cost-effective measure of producing composites (3).

Amongst the renewable materials that are being used in the polyurethane industry today, the use of natural fillers has gained considerable attention. Generally, fillers are known to improve the density, mechanical, optical, electrical, and thermal properties of polymers. Additionally they provide a cost-effective way of producing polymeric composites without compromising their inherent properties (6). Several studies suggest that the addition of natural fillers/fibers to PU composites improves the mechanical properties of such composites (7-11). The two major points have to be considered while designing the ecofriendly composites are: biodegradable characteristics to solve environmental problems (12-16) and complete utilization of products and residue of the agro-industries. PU is an ideal polymer matrix to prepare elastic materials with improved flexibility and for using such naturally available resources and also for using natural fillers/fibers. In this regard, the main goal of this research investigation is to study the effect of TSP in PU matrix on the mechanical and micro structural behaviors of the composites.

EXPERIMENTAL:

Castor oil (CO) was obtained from Sd Fine-chemicals (India). Its molecular weight (Mn) is 930, hydroxyl group/molecule is 2.24, acid number is 1.48, and isocyanate equivalent is 330, and these characteristics were determined as per standard procedure. Toluene-2,4-diisocyanate (TDI) and Dibutyl tin dilaurate (DBTL) were purchased from sigma and were used without any further purification. Methyl ethyl ketone (MEK) is of AR grade. TSP was obtained from local place and were dried overnight in a hot air oven at 60 °C and powdered this powder was sieved through 25 to 30 μm before use. So that the particle size of TSP remains less than 20 to 30 μm . The details of chemical composition of tamarind seed powder is given in table 1.



Table 1
 Chemical composition of Tamarind seed powder

Name of the components	Chemical composition (wt. %)
Moisture	9.4-11.3
Ash	1.60-4.2
Protein	13.3-26.9
Fat/oil	4.5-16.2
Crude fiber	7.4-8.8
Fiber	3.3
Total solid content	60.5-65.4

Fabrication of PU/TSP green composites:

The castor oil (0.001 mol) was thoroughly mixed in 50 ml of MEK and placed in a three-necked round-bottomed flask. TDI (0.0015 mol) was added followed by two to three drops of DBTL catalyst. The whole content of the flask was stirred for about 30 min under nitrogen gas purge at 65-70 °C to prepare isocyanate-terminated pre-PU polymer. The calculated amount of TPR (2.2, 5, 7.5, 10 wt %) was treated with TDI and was added to the pre-PU mixture and stirred again for 1h. the reaction mixture was then degassed under a vacuum and poured into a cleaned glass mold coated with a releasing agent. The mold was kept at room temperature for overnight and cured at 60 °C for 5 h. A PU/TSP green composite sheet thus formed was cooled slowly and released from the mold (17, 18).

RESULT AND DISCUSSION:

Fourier transform infrared spectroscopy (FTIR):

FTIR spectra of PU/TSP green composites are shown in Figure 1 and summarizes the observed and the expected IR data for characteristic groups of TSP filled PU green composites in Table 2. From the table 2 an observation was made that, PU/TSP green composites showed all absorption bands corresponding to PU (see Table 2). The absence of peak at 2220 cm⁻¹ clearly confirms that, there are no free -NCO groups in PU [20]. The shifts in the observed band 3355-3361 cm⁻¹ is due to the formation of hydrogen bond between TSP and PU matrix. The characteristic absorption peak is observed at 1455-1456 cm⁻¹ for C=C aromatic ring. All PU/TSP exhibit the carbonyl absorption bands at an approximately the wave number range 1600-1608 cm⁻¹, which can be attributed to the stretching mode of the hydrogen bond. PU/TSP exhibit the characteristic absorption bands at 1531-1538 cm⁻¹ which is due to >C=O group of urethane linkage. There is a variation in stretching frequencies as the filler concentration is varied; this is due to the change in degree of hydrogen bonding, and/or physical interactions between TSP and PU.

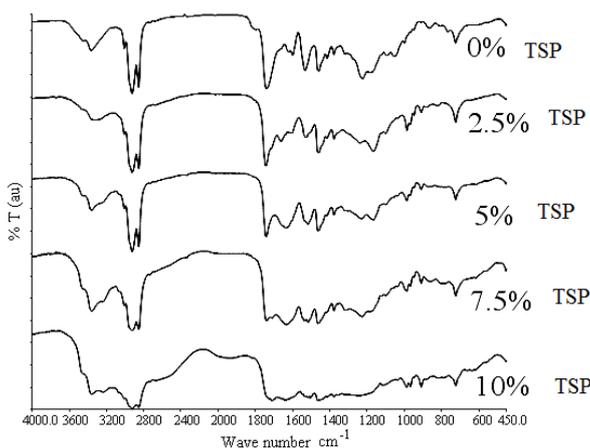


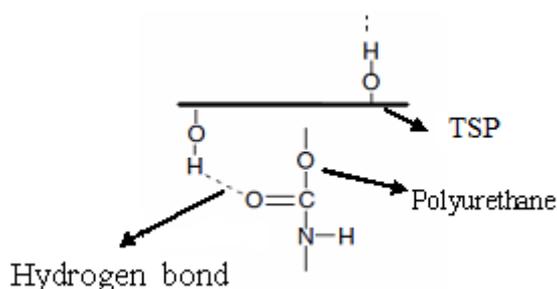
Figure 1. FTIR spectra of PU/TSP green composites

Table 2. Important band assignments of FTIR spectra of PU/TSP green composites

Group	Expected peaks (cm ⁻¹)	Observed peaks (cm ⁻¹) for PU/TSP system				
		0	2.5	5	7.5	10
C=O	1630-1690	1600	1601	1601	1602	1607



N-H stretching with hydrogen bonding	3200-3400	3360	3350	3354	3354	3354
Aromatic C-H stretching	3000-3100	3010	3010	3009	3009	3010
C=C aromatic ring	1450	1456	1456	1455	1456	1455
1,4 - substituted phenyl ring	860, 762	863, 723	866, 723	867, 723	865, 723	867, 723
$\begin{array}{c} \text{O} \\ \\ -\text{C}-\text{O} \text{ (ester)} \end{array}$	1750-1700	1742	1740	1735	1734	1739
$\begin{array}{c} \text{O} \\ \\ -\text{NH}-\text{C}-\text{NH}- \\ \text{(urethane peak)} \end{array}$	1528	1537	1531	1538	1533	1538
Aromatic C-H bending	860	808	809	811	812	810



Scheme 1. Schematic representation of formation of hydrogen bond between PU and TSP

Tensile behaviors:

The tensile strength, tensile modulus and percentage elongation at break of the PU composites lies in the range 2.62- 5.24 MPa, 3.96- 9.32 MPa and 116.1% - 158.7% respectively and its values are given in table 3. A significant increase in tensile strength was found to occur upto 7.5 wt. % of TSP content. This can be attributed to the good interfacial adhesion or physical interactions between TSP filler and PU matrix. A schematic representation of hydrogen bond formation between urethane groups of PU and -OH groups of GS (lignocellulose) is depicted in Scheme 1. This type of bond formation can lead to a higher efficiency of the stress transfer from the PU matrix to the TSP filler. A significant improvement in tensile modulus from 3.96 to 9.32 MPa with increase in TSP content from 0 to 7.5 wt % in PU matrix was noticed. This is due to the TSP particulate filler interlocking between the flexible networks of PU which reduces the segmental movement. With increase in TSP filler content, there is a reduction in chain mobility leading to increased chain rigidity. An increase in chain rigidity seems to improve the surface hardness and tensile modulus. This clearly indicates that there is inter locking of polymer chains through hydrogen bonding between hydroxyl groups of TSP with urethane groups of PU matrix. A marked improvement in percentage elongation at break was noticed upto 5 wt % of TSP content in PU systems. Further increase in TSP dosage above 7.5 wt %, reduces the percentage elongation at break of the composites. The restrictions imposed by TSP filler on polymer networks mobility would reduce the percentage elongation; this is a common observation with almost all filled composites [19-21]. Further increase in filler content, above 7.5 wt % in PU matrix will results in poor wettability, which causes poor interfacial adhesion/interaction between TSP and PU matrix. Hence, tensile behaviour of the PU composites reduces significantly for higher dosage of filler loading.



Table 3. Physico-mechanical properties of PU/GS green composites

TSP in PU (wt. %)	Exptal. density (g/cc) ± 1.3	Theor. density (g/cc)	Void content	Surface hardness (Shore A) ± 1.5	Tensile strength (MPa) ± 0.30	Tensile modulus (MPa) ± 0.35	Elongation @ break (%) ± 2.5	Resilience
0	1.042	-	-	67	2.62	3.96	132.8	14
2.5	1.049	1.042	0.38	67	2.65	4.43	142.6	14
5	1.047	1.034	1.25	69	3.52	7.79	158.7	13
7.5	1.056	1.033	1.93	70	5.24	9.32	141.5	13
10	1.012	1.025	2.04	71	3.22	7.11	116.1	12

Wide angle X-ray scattering spectroscopy:

The effect of GS content on the microcrystalline parameters of PU/TSP composites has been studied using wide angle X-ray scattering (WAXS). X-ray profiles of PU/TSP composites are shown in Figure 2. From the figure it was noticed that one broad and intense peak at 2θ range $19.8^\circ - 20.8^\circ$. The x-ray profiles of PU/TSP systems significantly depend on the composition of the composites and the presence of inter chain interaction forces which is originated from the partially ordered structure formed by hard segment domains and polymer-filler interaction [22, 23]. The shape and size of the peaks in X-ray profiles varied with composition of the composites. Two main factors such as variation in crystal size ($\langle N \rangle$) and strain (g, in %) are responsible for the changes in crystalline behavior of PU/TSP composites [49]. Asymmetric distribution function has been used to compute microcrystalline parameters such as crystal size, lattice strain, surface weighted crystal size (D_s), smallest crystal unit (P), number of unit cells counted along a direction perpendicular to Bragg plane and interplanar distance (d) and the obtained results are tabulated in Table 4. From Table 4. it is evident that, the crystal size and surface weighted crystallite size increases with increase in TSP content from 2.5 to 7.5%. This is probably due to the change in chemical composition and the degree of interaction between PU and TSP. The number of unit cells ($\langle N \rangle$) was found to slightly decrease or retain with increase in filler content in the PU matrix. The extent of crystallinity present in the polymer system clearly indicated by the order of magnitude of the D_s . The change in the microcrystalline behavior in green composites is due to changes in the reordering of molecular chain in the composites. According to Hosemann’s model, there is an interaction between the strain present in the polymer network and the number of unit cells coherently contributing to the X-ray profiles [24,25]. It was found that, higher interplanar distance (d) for TSP filled systems than pristine PU is evident from Table 4. This implies that there is a change in PU/TSP structure resulting in morphological changes with the composition of filler content.

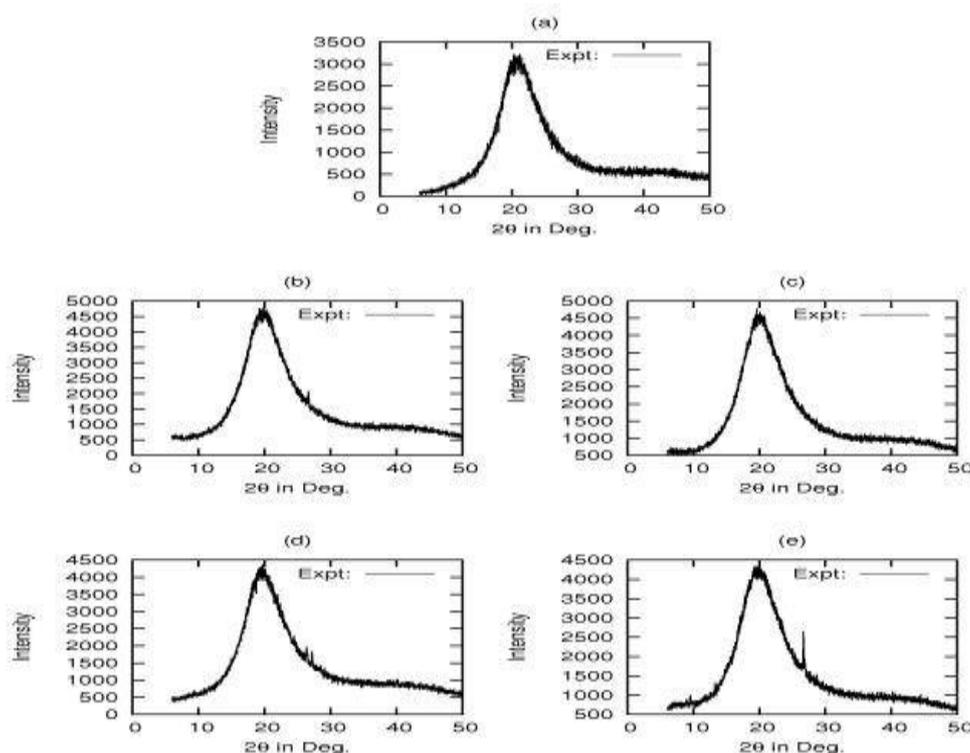


Figure 2. XRD patterns of (a) 0, (b) 2.5, (c) 5, (d) 7.5 and (e) 10 wt. % GS filled TSP green composites

Table 4. Microstructural parameters calculated using X-ray line profile analysis employing exponential distribution function for PU/GS green composites

TSP content in PU (wt %)	2θ (°)	'd' (Å)	<N>	P	'g' (%)	'α'	Ds = <N> d (Å)	'Δ' (%)	α *
0	20.8	4.22	2.98	2.46	0.1	1.966	12.55	5.13	0.173
2.5	19.9	4.44	2.82	2.32	0.1	2.005	12.58	5.04	0.167
5	20.1	4.41	2.87	2.38	0.1	2.001	12.72	5.09	0.171
7.5	19.8	4.48	2.98	2.54	0.1	2.275	13.39	3.65	0.173
10	20.0	4.43	2.83	2.41	0.1	2.293	12.62	3.96	0.169

The computed simulated and experimental line profiles from exponential distribution function for all PU/GS composites are shown in Figure 3. It is evident from these figures that there is a good agreement between experimental and simulated X-ray data, obtained using model parameters. In all the cases, the goodness of the fit was less than 10 % of the mean value and it clearly reveals that model used here are quite reliable.

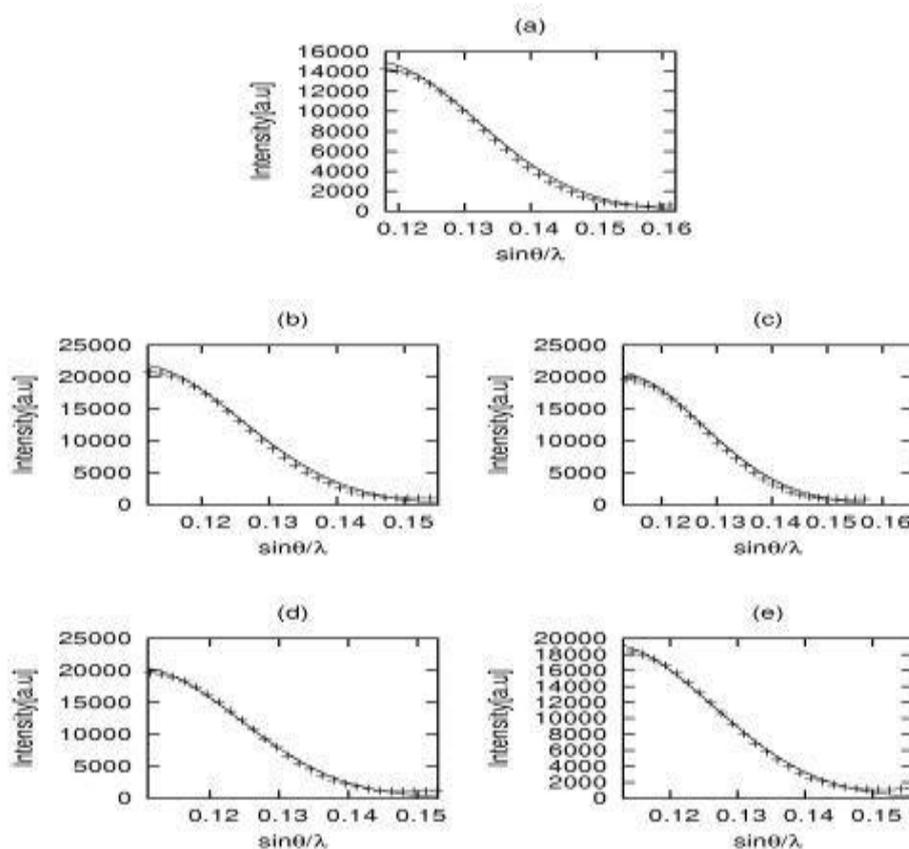


Figure 3. Experimental (++) and simulated (--) patterns using exponential distribution function for (a) 0, (b) 2.5, (c) 5, (d) 7.5 and (e) 10 wt. % TSP filled PU green composites

The enthalpy (α^*) of PU/TSP composites was estimated using following relation reported elsewhere ($\alpha^* = \langle N \rangle^{1/2} g$) [26]. The enthalpy value indicates that the growth of paracrystals in a particular material is appreciably controlled by the level 'g' in the polymer network in a plane. The enthalpy is a measure of energy required for the formation of net planar structure. The estimated values of enthalpy (α^*) for PU/TSP composites lies in the range 0.167-0.173, which is in good agreement with the data published elsewhere for polymers [26]. The lower values of α^* , suggests that there is a phase stabilization in PU/TSP composites. For a better perspective, we have projected the microstructural parameters onto a two-dimensional plane which results in shape ellipsoids for composites investigated here and is shown in Figure 4. It is evident that, there is change in the shape of ellipsoids with increase in filler content, but essentially, the changes are only on the periphery of the crystallite shape ellipsoid.

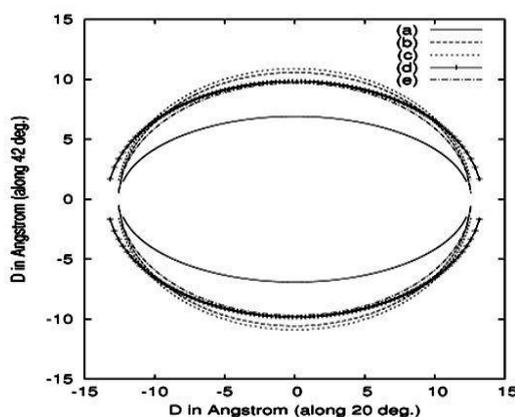




Figure 4. Variation of crystallite shape ellipsoid for (a) 0, (b) 2.5, (c) 5, (d) 7.5 and (e) 10 wt. % TSP filled PU green composites

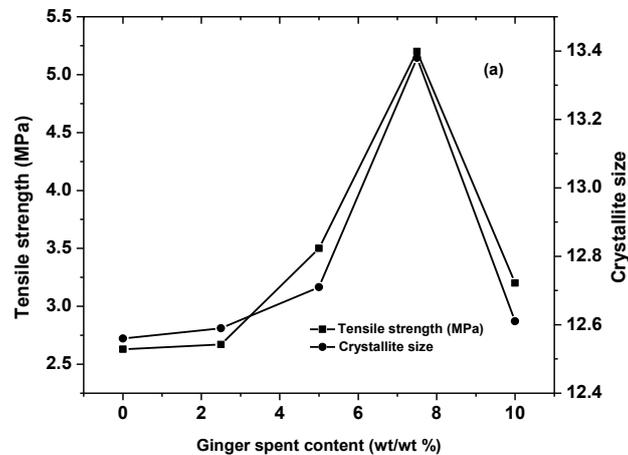


Figure 5. The plots of tensile strength and crystallite size as a function of weight percent of PU/TSP green composites

For the sake of comparison, the plots of crystallite size as a function of GS content with tensile strength for all PU/TSP composites were presented in Figure 5. This figure clearly indicates that the variation in tensile strength strongly depends on the crystallite size of the PU/TSP green composites. Based on the variation of crystallite size and tensile strength values it was concluded that 7.5 wt% GS loaded PU green composite is the optimized composition.

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Ruling class experiences and memories – Revisit to Prison Narratives of the British women prisoners in colonial India

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Abstract: *The British ruled Indian sub-continent for more than three centuries. Their hegemony was strongly encountered by many Indian rulers. They captivated the British officers and their family members during wars. In the present paper, the researcher analyses the captive narratives of Lady [Florentia]Sale and Lady [Julia]Inglis. They document deprivations, humiliations, pain and suffering when imprisoned. They narrate about starvation, beatings and living in state of fear, anxiety and suffering. They depicted contrasting image of the British which highlighted sovereignty, supremacy, control and white race supremacy. Thus, these narratives as a significant part of historiography shaped different opinions and mirrors history from an unusual perspective. Antonio Gramsci and Michel Foucault's theories discuss about hegemony and related issues of incarceration and penology. Within the abode of these theories above mentioned narratives are discussed. Thus, the present article concludes and exposes the vulnerability of the British during few wars and opens up a dark corner of colonial hegemony in Indian subcontinent.*

Key Words: *Ruling class women prisoners, Historiography, Prison Narratives, Theories of Antonio Gramsci and Michel Foucault.*

INTRODUCTION:

The prison memoirs, diaries and prison narratives form a pivotal role in analysing various aspects of prisoners and the hegemony. They represent the people who suffered trauma during captivated life. Their recollected experiences showcase penology, contemporary society, geo-political developments, wars. The writings coming out of prisons can be classified into three categories-those written by long time criminals, those written by non-criminals (homicides, political and religious prisoners) and those written by short time criminals and non-criminals. This distinction is based on familiarity with the prison culture, with the internalisation of the experiences. Prison writing is centrally about violence. The beginning of the sense of violence is awareness of death. Captive narratives are mostly contemplation of death or own deaths. Deaths impose on others the great gamble between our deaths and theirs. The present paper analyses the captive narratives of Lady [Florentia]Sale and Lady [Julia]Inglis during their imprisonment by Afghan and rulers of Lucknow before 1845. These women along with other British families undergo traumatic experiences as they move from one area to another under the supervision of native rulers in case of Lady Slade and Lady Inglis, in the siege within the cantonment of Lucknow. The political developments, frequent wars, mutinies, weather condition, topography, travelling and food became major concerns. The narratives discussed in the paper demonstrate how British imperial discourse highlighting supremacy, control, sovereignty and white dignity, contrasts. The British suffered wounds, lingering deaths from severe wounds and cholera. The British used to live in restricted areas- white town and the cantonment. They used to separate themselves from rest of the natives/Indians. So, the situations became critical when they were captivated and imprisoned. The colonial spaces were an attempt to ensure a public sphere insulated from the surrounding native spaces. Such crowded native space acquired top priority in the 19th century, especially in the wake of 'Mutiny'. The colonial state organized bazaars around cantonments and native towns.

Innes Munro describes his experience of captivity as 'unparalleled', and J.Z.Holwell calls his 1842: narratives coming out of India were rare until Anglo-Mysore wars. But what makes these narratives different is that the construction of a very different order of cultural encounter in the midst of war, siege and captivity. Critics have noted that captivity narratives serve as modes of constructing 'foreignness' by offering detailed ethnographic accounts of their captors' lives and cultures (Ben-Zvi), or else they constructed specific myths around natives and Englishmen, as



Kate Teltcher argues about narratives of the 'Black Hole' of Calcutta(1996). The captivity narrative of selected essays presents the miseries of the English as unique. As observed in their narratives, the captors are lacking in all chivalry and codes of conduct. The writers describe how Asian captors take playfully torturing the English captives suggesting, therefore, that inflicting pain comes 'naturally' to the Asian even when this being done to a hapless, vulnerable captive.

Lady (Florentia) Sale's experiences are documented in *A Journal of the disasters in Afghanistan* (1841-2). New York: Harper and Brothers,1843. The second source of the paper is *The military operations at Cabul (1843) From The military operations at Cabul, which ended in the retreat and destruction of the British Army, January 1842: with a journal of imprisonment in Afghanistan* by Vincent Eyre. She elaborately describes the topography of Afghanistan. Many British women were captivated with their children. They were not kept in a single place. They were 9 ladies, 20 gentlemen, and 14 children. Their troop also included 17 Europeans, 2 European women, and 1 child. The Afghan captors moved from place to place which annoyed the British. They started their journey from Khoord Cabul to the valley of Lughman, North of Jellalabad. On their way, they witnessed the dead bodies of more than two hundred Europeans. The captors made the British to march twenty-four miles every day. They observed Hindustanees appearance from behind rocks and within caves. They shelter from murderous knives of Afghans and the inclemency of the climate. On their way, some of the Hindu Banneahs gave good food, sweets, and pistaches. They were forced to face harsh weather, bitter cold, travel in mountains and valleys of Afghan unhealthy food, proper clothing. They were always worried about next place to be moved, anxieties, communication issues with their husbands working as British Army officers or administrators. Washing cloth was luxury for them. The weather was quite cruel. Sometimes washing their faces was a luxury. Adapting to climate was a painful process, as the cold and glare of the Sun on the snow had three times peeled their faces, from which the skin came off in strips.

Afghan captors like Sultan Jan, Zulficar Khan, Salamid Khan, Mahommed Akbar Khan, Gholab Moyenooden, Mohammed Shah Khan are taken as examples for Afghan leaders and their style of controlling prisoners, their wars and strategies against the British are elaborately described. While discussing, about their atrocities, Lady Florentina says how the Afghans took away horses from enemies and also their servants. During many situations, waving longhee was considered as an act of unconditional surrender. The topographical observations include frequent earthquakes which were quite common throughout their journey. Every time, they forced to change their life style. But the Captors were totally neglecting the ongoing geographical disasters. They were in pursuit of the fugitives and roads were eating the bodies of those that die. As natives, they were adapted to the Afghan nature and forced the prisoners to move to their next place. This created much havoc among the British. On their way, the imprisoned observed the life of Afghans. The citizens were ruined by the perfect stagnation of trade. They were suffering from poverty and insecurity. While introducing different sectors of Afghanistan, the writer introduces *Ghilzye* tribe and their culture elaborately. Their culture astonishes these foreign prisoners. Poverty, illiteracy, unhygienic conditions, internal fights, instant killings were issues which make them to feel racial supremacy repeatedly.

Special mention has to be mentioned about the British officers who tried to save imprisoned. Major Pottinger who had the perfect knowledge of the Persian language, and his acquaintance with the manners and customs of the people, he well knew how to manage them, and take advantage of the slightest opening on their part in their favour. His coolness and decision were only equalled by the promptness with which he met the wishes of the chiefs: giving them *baraisan* the neighbouring lands, empowering them to receive the government rents, all with documents.

Another dimension of the atrocities was that looting the arrested women. Mohammed Shah Khan took away all the jewels of Lady Macnaghten more than a lakh of rupees and her shawls valued between 30,000 -40,000. If the Sirdar or a Chief arrests woman, the reward was immense. When Amenoollah Khan sent his cousin Shamshuddeen to lay waste the Logurcountry, destroy the forts, and capture the women, their chief Akbar promised a reward of 30,000. The vulnerability of the women was exposed when a gloomy incident of Serj. Deane's wife, a Persian woman, has been taken by force and married to a younger brother of Mahommed Shah Khan. Whenever that man enters her presence, she salutes him with her slipper. It is only within a few days that she has been told of Deane's death: She appears to have been sincerely attached to him: and is represented as a very pretty young woman.

Lady [Julia] Inglis narrates how they protected themselves from attackers from all around the cantonment area of Lucknow in *Mutiny*. Few British officers were killed and they continuously heard the heavy guns. The destruction of property during the night was terrible and saving their lives was their chief thought. But their Indian servants remained loyal and behaved well with them. The anxiety and terror were so serious that Major Banks had sent telegram to his higher authorities about his successors if he dies in the disturbances. He recommends the name of Colonel Inglis in command of the troops until better time arrives irrespective of their seniority. These incidents mirrors how Indian freedom fighters were successful in entering into the strongly protected cantonments of the British and create havoc, insecurity among them. These were the significant incidents leading to 1857 - the First war of Indian Independence.



The narrator describes the loss of Major Banks, who fought bravely till his death. His life was valuable for the British. She introduces Mrs. Dorin who was also killed during the firing. She had fled from Seetapore, lived in jungle for few days and was protected by the villagers. Dr. Brydon, the survivor of the Cabul massacre, was also badly injured in the back while sitting at the dinner. Lady Inglis names many officers who were killed during the siege, officers who helped them to inform the head quarter to send troop to control attacks from Cawnpore side. Some Sikh soldiers were deployed inside the cantonment and it was against the wishes of Lady Inglis. She don't wanted any natives inside. But she was silenced by other officers as natives outnumbered them. These minute details focus on the hegemony culture and their racial feelings towards the native. The British in the Lucknow camp were deprived of sufficient food. They received letters from their dear ones after five months. Their challenge was to save children from cholera and other diseases. Thus, these memoir and diary opens up new revealing corner of colonial life. They help in reading the connections among various writings and past incidents. Text, Foucault has argued in his various studies of social institutions, is also central to the ideas that form institutions. The history of Western civilization is the history of writing- the laws, edicts, manifestoes, theologies, verdicts, that established codes of conduct the pattern behaviour the established prisons. The experience, of being in those institutions is also in part contained in the writing. Thus, the texts that frame dominant institutions and the counter texts that try to map roots out of them provide one of the central themes of prison studies.

To conclude, the prison writing from abroad is conformation of the tolerance of this society, setting a seal on its internal complacency. Ioan Davis opines that reading prison writing is to uncover the silences of those who don't write, and about whom no one has written. He also notices that most writing out of prison is necessarily by privileged prisoners- not only are they literate but in large number of cases they are therefore political religious or other ideological reasons which set them apart from everyday criminal. They are as much interveners in the process as they are prisoners.

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GROWTH OF FINANCIAL INCLUSION IN INDIA: CURRENT TRENDS, ISSUES AND OPPORTUNITIES

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Abstract: *Financial Inclusion is the part and parcel of banking sector to attain the inclusive economic growth. In India, the Reserve Bank of India and Government of India working mutually to irradiate the financial vulnerability among the people living in a remote part of the country and they are trying to inculcate the population with proper financial literacy with the help of Financial Literacy Centres promoted by the commercial as well as private sector banks. In India, 45 crore beneficiaries banked so far, Rs. 1,63,631.38 crore balance in beneficiary account and 1.26 lakh Bank Mitra delivering branchless banking services in Sub-Service areas (PMJDY, 2021). Every progressive action will have its own challenges and opportunities. The paper discusses about the heterogeneity in geography, demography and cultural issues and fundamental challenges for the banking sector to reach the flawless inclusive financial growth.*

Key Words: *Financial Inclusion, Banking Sector, Financial literacy, PMJDY.*

INTRODUCTION:

Access to a formal financial system can economically and socially empower the individuals, particularly poor households, farmers, small entrepreneurs and other vulnerable section of the society by permitting them to better integrate in to the formal economy. A well developed and inclusive financial system assists rapid growth and better income distribution in an economy. According to population survey of India the majority of the necessitous in India lives in rural areas. Rural finance is one of the several tools to be used in fight with rural poverty and uplift the economic growth. Rural finance helps significantly to build income of rural farmers and other rural entrepreneurs and their employees. But lack of access to a formal financial institution is still a major concern in financial services delivery to rural poor and households.

Recognising the significance of credit in different sectoral development, policies were introduced and reviewed by the Government of India, Reserve Bank of India and NABARD. The institutional expansion of credit flow to agriculture, expansion of Kisan credit card, financing of new investments, provision of loans etc. are important policy followed by the RBI to enhance the credit to the rural sector. Some of the recent success like PMJDY, Direct Beneficiary Transfer, SHGs, Business Correspondents and digital financial services etc are the integral part of rural financial inclusion. SHG Bank Linkage Program leads the economy towards gender equality, financial literacy and help the economy to reach the vulnerable sections of the society.

LITERATURE REVIEW

Financial Inclusion will help the country to achieve economic development and upliftment of underprivileged people living in the grassroot level of the country by providing efficient financial services and products. The formal financial access can take the vulnerable section and poor into the main stream of the society and that can take them to the financial inclusion (Marisetty, 2019). In this process all kinds of banks will play the major role to reach the last mile of the society in the name of inclusive growth. After the nationalisation of banks in the year 1969, Government of India and Reserve Bank of India gave attention to the financial inclusion of the country by implementing different types of products and services. The rural financial inclusion is popularized with the credit disbursement to the rural population through primary agriculture co-operative societies (Lal, 2018). The Business Correspondents, Self-Help Group Bank Linkage Program, Issuance of credit cards in the name of Kisan Credit Card, Micro Finance development etc., are initiated with the support of commercial banks, Regional Rural Banks and also Private Banks from 1987 to till today. The contribution of co-operative banks and agricultural societies contribution are remarkable in the field of rural financial inclusion (Patnaik, 2020). In the 2014, the NDA government-initiated Pradhan Mantri Jan Dan Yojana



to make a transformation in the financial sector of the country. The PMJDY scheme is there to provide No-frill accounts, easy KYC, debit card facilities and also it is a package of social security schemes namely Pradhan Mantri Jeevan Jyoti Bima Yojana, Atal Pension Yojana etc. The mission of PMJDY was to make India financially included with proper financial literacy (Bijoy, 2017). Financial inclusion can be escalated through the penetration of financial literacy among the people especially among the low-income and the weaker sections of the society (Johnson, 2016).

Definitions of financial inclusion by different institutions and authors are as follows:

Sl. No	Institution/Authority	Definition
1.	World Bank	Every individual and business have access to useful and affordable financial products and services that meet their needs-transactions, payments, savings, credit and insurance delivered in a responsible and sustainable way.
2.	United Nations (2006)	A financial sector that provides 'access' to credit for all 'bankable' people and firms, to insurance for all insurable people and firms and to savings and payments services for everyone. Inclusive finance does not require that everyone who is eligible use each of the services, but they should be able to choose to use them if desired.
4.	Reserve Bank of India	It is the process of ensuring access to appropriate Financial products and services needed by vulnerable groups such as weaker sections and low-income groups at an affordable cost in a fair and transparent manner by mainstream institutional players.
5.	Dr. C Rangarajan (2011)	Financial inclusion may be defined as the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low-income groups at an affordable cost.

NEED FOR THE STUDY

Progress of financial inclusion can be seen in India since the inauguration of programs like, licensing new banks, PMJDY, Business Correspondents, Kisan Credit Card, Self-Help groups etc. Initially there was a lot of struggles and difficulties faced on the road of financial inclusion by the policy implementers. The up headed challenges are gradually minimized by the GoI and RBI by creating the awareness of new programs and schemes of financial inclusion. It is necessary to understand the recent trends in financial inclusion without forgetting the past issues and challenges faced by the policy makers of the country.

RESEARCH OBJECTIVE

The objectives for the study are:

1. To understand the concept of financial inclusion.
2. To list out the issues and challenges for financial inclusion in India.
3. To analyze the financial inclusion programs available for achieving inclusive growth.
4. To suggest the policy makers that how the financial inclusion can flourish in time ahead.

RESEARCH METHODOLOGY

The present research paper is using secondary data by collecting information on the current issues like Government reports, RBI annual reports, Journals, Articles, magazines etc. In line of this consideration of ample of literature review has been implemented to carry out the present research meaningful. The present paper will provide the better understanding to the subject of established hypothesis.

1. Null(H_0): There is No significant relationship between happening of financial inclusion through financial inclusion programs.
2. Alternate (H_1): There is a significant relationship between happening of financial inclusion through financial inclusion programs.



CHALLENGES FOR BANKS TO ACHIEVE INCLUSIVE GROWTH

Many causes can be listed for the financial exclusion throughout the globe. In India, there is highly remote, hilly and sparsely populated areas are very common and they are identified with poor infrastructure, physical access to the bank is an obstacle. From the demand side, lack of awareness, low income and illiteracy act as barriers. From the supply side, distance from branch, branch timing, staff attitudes are common reasons for exclusion. The requirements of independent documentary proof of identity and address can be a very important barrier in having a bank account especially for migrants and slum dwellers. The majority of rural population more especially the poor lot has been excluded from gaining the benefits of recent developments in the fields of globalization, liberalization and financial sector reforms. Some of the factors affecting the access and usage of banking services in India are listed below:

1. Geographical Barrier:

Most of the Indian population lives in the rural areas and many of the remote villages are still having the problem of infrastructure facilities. Because, it is covered with hilly areas, thick forests and some where it is very difficult to reach the residence of the population.

2. Financial Literacy:

As per the survey conducted by the OECD, the report revealed that in the year 2019, 27.18% of the population achieved minimum level of financial literacy as compared to 20% in 2013. But the rate of literacy is comparatively very low to the total number of populations of the country.

3. Psychological Barrier:

Some of the cultures in India do not support the access and usage of modern financial systems. It is due to lack of education and the trust in advanced technology and the system of financial institutions.

4. Absence of Legal Identity:

Somewhere, Remoteness in the place of living, vulnerability, implementation of advanced technology and improper connectivity to the grassroot level made the country population fail to get the proper legal identification. Before the implementation of ADHAR, there was no other proof to connect the bank accounts with general public. It was the formidable situation for the banking sectors.

5. Inadequate Infrastructure:

Limited physical infrastructure, limited transport facility, inadequately trained staff etc., in parts of rural hinterland and far-flung areas of the Himalayan and North East regions create a barrier to the customer while accessing financial services.

6. Terms and conditions:

Banks imposed many terms and conditions for the accessing the financial services such as minimum balance, supportive proofs and documents, minimum transactions and overdraft policies etc resulting in less consumption of services and become the reason for demotivation among the people.

INITIATIVE UNDERTAKEN BY THE RESERVE BANK OF INDIA

1. Business Correspondents:

Table 1.1
Progress of financial inclusion through Business Correspondents

Sl. No	Particulars	End of 2010	End of 2017	End of 2018	End of 2019	December 2020	December 2021
3.	Total No. of banking outlets in Village: BCs (No. in lakhs)	34,174	5,43,472	5,15,317	5,41,129	12,36,809	18,44,732 [^]
4.	Basic Savings Bank Deposit through BC's (No. in lakhs)	130	2,800	2,890	3,190	3,601	3,919
5.	Basic Savings Bank Deposit through BC's (amount in crores)	1,100	28,500	39,100	53,195	77,163	95,021

(Source: RBI Annual Report 2021-22)

The above table explains about the performance of BCs. At the end of 2010, total number of BCs was only 34,174 all around the country. But at the end of dec. 2021 the number increased to more than 18,44,732. Nearly 128% of out lets increased in the villages as compare to the year of 2020. It is clear that before the years 2017, performance of BCs was comparatively low. But the initiation of PMJDY gave the boost to the BCs to make an active operation. Due to this it is identified that, more than 95,021 crore amounts deposited through BCs in to the bank accounts.



2. Self -Help Group Bank Linkage Program (SHG-BLP)

With the help of NABARD and RBI, the micro financial institutions are acting as a key for financial inclusion in rural part of the country. To increase the savings capacity of the members of SHGs and provide sufficient credit facilities to them directly by the bank is the focused theme of SHG Bank Linkage Program.

The concept of JAM i.e., Jan Dhan, Aadhaar and Mobile phones made every village digitalized. At the end of year 2018, 2.06 lakhs SHGs are linked with credit and 3.8 lakhs SHGs are digitalized. Total number of SHGs savings linked with banks at the end of 2019-20 was 106.97 lakhs. The digitalization of SHG is initiated under the scheme called E-Shakti and many of the women in the country are independently living with the help of this scheme.

3. Pradhan Mantri Jan Dan Yojana:

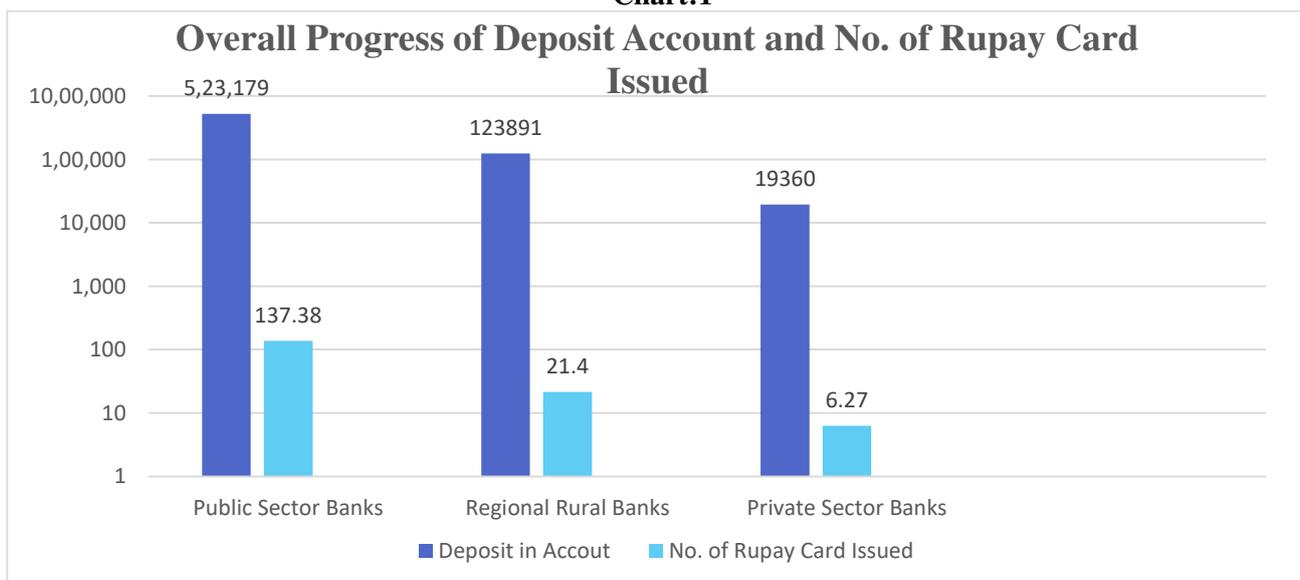
Table 1.2
Amount deposited in Jan Dhan account and Rupay debit card issued

(All fig.in crores)

	Agency	Particulars	2021-22	2020-21	2019-20	2018-19	2017-18	2016-17
1.	Public Sector Banks	Deposits in account	1,26,214	1,13,145	94,838	76,696	63,021	49,265
		Number of Rupay debit card issued	27.07	26.34	24.42	22.89	19.06	17.60
2.	Regional Rural Banks	Deposits in account	32,720	28,122	21,554	16,590	13,296	11,609
		Number of Rupay debit card issued	3.40	3.50	3.44	3.85	3.67	3.54
3.	Private Sector Banks	Deposits in account	4,698	4,282	3,288	2,819	2,175	2,098
		Number of Rupay debit Card issued	1.10	1.12	1.15	1.15	0.91	0.84

(Source: www.pmjdy.gov.in , Annual Reports of NABARD)

Chart:1



The above drafted table and chart depicts that, the performance of public sector bank was appreciable and the contribution of other two cannot be forgettable. Out of three types of banks in the initial stage of PMJDY, the public sector banks opened 9.42 crore bank accounts, the RRBs opened 3.25 crore bank accounts and the private sector banks opened 0.48 crore account in a single year. As of the year end of previous financial year the number got increased to



33.4 crore, 7.55 crore and 1.25 crore respectively by the banks. This is sufficient to say that, the banking sector is putting massive efforts to achieve the financial inclusion by creating the gentle opportunities.

Table 1.3

Table showing amount deposited in Jan Dhan account and Rupay debit card issued by the banks

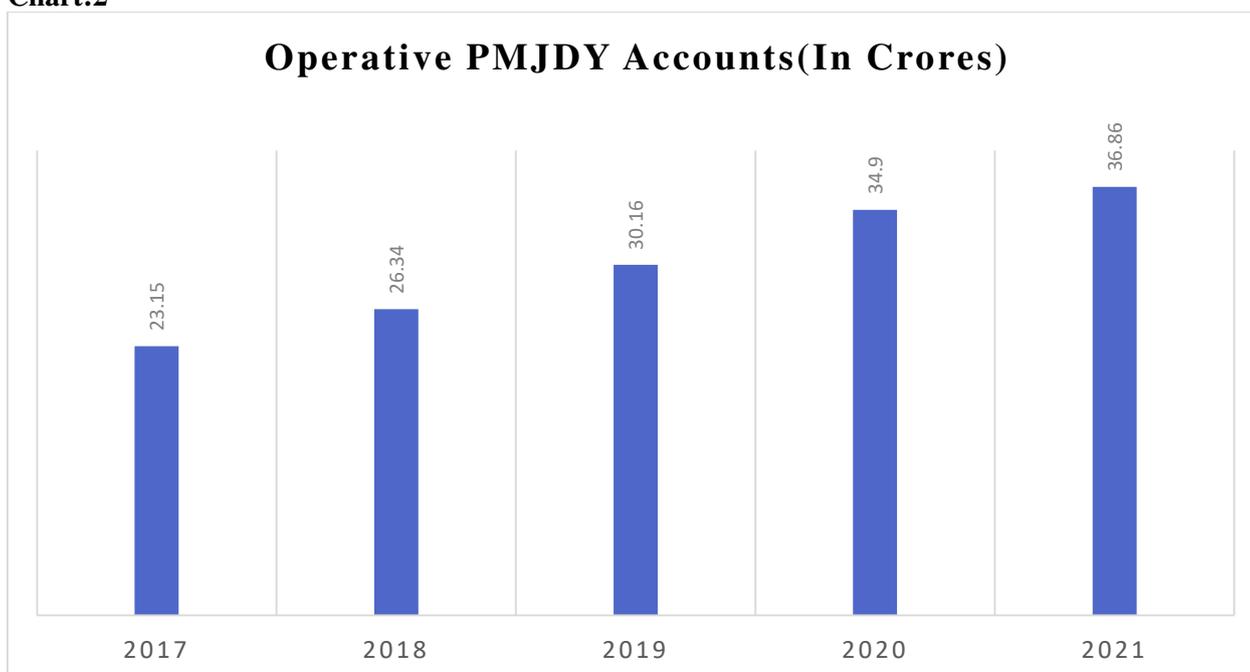
(All fig.in crores)

Sl. No	Agency	Particulars	2020-21	2019-20	2018-19	2017-18	2016-17	2015-16
1.	Public Sector Banks	Deposits in account	1,13,145	94,838	76,696	63,021	49,265	28,139
		Number of Rupay debit card issued	26.34	24.42	22.89	19.06	17.60	14.31
2.	Regional Rural Banks	Deposits in account	28,122	21,554	16,590	13,296	11,609	6,178
		Number of Rupay debit card issued	3.50	3.44	3.85	3.67	3.54	2.69
3.	Private Sector Banks	Deposits in account	4,282	3,288	2,819	2,175	2,098	1,354
		Number of Rupay debit card issued	1.12	1.15	1.15	0.91	0.84	0.74

(Source: www.pmjdy.gov.in , Annual Reports of NABARD)

The above-mentioned table explains about the amount deposited in Jan Dhan account and number of Rupay debit card issued by the banks. From the above table it is observed that public sector bank, Regional rural bank and private sector bank received Rs. 101,699, Rs.24,294 and Rs. 3,631 crores in the financial year 2019-20. In all five years amount received by all three types of banks were gradually increasing in nature. It is observed that there is a slight fluctuation in issuing debit cards by RRB's and Private sector banks. At the end of year 2019-20 Private sector banks, Regional Rural Banks and Public Sector Banks issued 1.14, 3.45 and 24.52 crores respectively. The above table clearly depicts public sector banks performing extremely well as compare to remaining two.

Chart:2



(Source: www.pmjdy.gov.in)

As per the prediction of RBI, many of the PMJDY accounts treatment are inoperative if the customers are not involved in the transaction process. But it is identified that there is an indication of continuous increase in the operation of PMJDY accounts. 85.6% of accounts are operative and among them 8.2% accounts are zero balance accounts.



4. Financial Literacy and Credit Counselling Centers

Financial Literacy Centres are one of the initiatives of RBI to create awareness on financial products and services among the public at large about the responsible borrowings, and the borrowings from formal institutions only, timely repayment of Credit and preparation of family budget etc., At the end of year 2020, there are 1,478 financial literacy centres opened in the country and nearly 1,94,032 financial literacy activities undertaken under the supervision of RBI. The Financial Literacy Week is an initiative of the Reserve Bank to promote awareness among masses/various sections of the population on key topics through a focused campaign every year.

5. Digitalization in Banking sector

Fintech is nothing but financial technologies to promote cashless economy, innovation with speed and taking the banking sector to every corner of the country with the help of Jan Dhan, Aadhar and Mobile (JAM Trinity) devices. According to the World Bank Group, over the last decade, 1.2 billion previously unbanked adults gained access to financial services and the unbanked population fell by 35% boosted by the mobile money accounts. The following table explains about the development of digital banking infrastructure in India.

Table 1.4
Performance of Digital Infrastructure in Banking Sector

(Volume in Million)

Particulars	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
RTGS	55.0	68.5	81.1	92.8	98.3	107.8	124.4	136.6	150.7	159.2
NEFT	226.1	394.1	661.0	927.6	1,252.9	1,622.1	1,946.4	2,318.9	2,744.5	3,092.8
Unified Payment Interface	-	-	-	-	-	17.9	915.2	5,353.4	12,518.6	22,330.7
BHIM Aadhaar Pay	-	-	-	-	-	-	2	6.8	9.1	16.1
Credit Cards	320	396.6	509.1	615.1	785.7	1,087.1	1,405.2	1,762.6	2,177.3	1,764.1
Debit Cards	327.5	469.1	619.1	808.1	1,173.5	2,399.3	3,343.4	4,414.3	5,123.9	4,020.0

(Source: RBI annual reports combined by the author)

The above-mentioned table consists the different digitalized infrastructure of banking sector which is useful for the remote reach of financial inclusion. There is a drastic difference in performance of RTGS and NEFT transaction from past 10 years. at the end of FY 2020-21, 159.2 and 3,092.8 million volumes of transactions done through RTGS and NEFT respectively. Many of the payment infrastructure like Unified Payment System named as financial technology, are preferred by the young adults. From 2016 to 2021 the volume uplifted by 17.9 million to 22,330.7 million. The performance of Debit and Credit cards are appreciable and it is identified that nearly 25% increase in credit card and debit card performance, but due to COVID-19 the number was slightly decreased to 18% in the year 2020-21.

CONCLUSION AND SUGGESTIONS

Financial Inclusion is not barrier for the development of banking sector. But it is the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low-income groups at an affordable cost (Rangarajan, 2008). As mentioned, there is a heterogeneity in geography, demography and cultural hindrance for the expansion of financial inclusion in India, but it is identified that, many of the programs like Bank Mitra, Self Help Groups, PMJDY and many of the social security schemes made the challenges into opportunity. The data of PMJDY is explaining that year by year the account opening numbers are increasing. Today there is more than 45 crore beneficiaries having bank account under PMJDY & more than 1,63,631 crore deposit accounts are opened. The percentage of operative PMJDY accounts also depicts that the financial



inclusion is happening through the program's initiations by Government as well as reserve Bank of India. (PMJDY, 2021) and the operation of other inclusion programs like Business Correspondents and Self-Help Groups (SHGs) are reached to the grass root level of the country. Hence, Null hypothesis has been rejected successfully because the study proved that there is a significant relationship between happening of financial inclusion through financial inclusion programs.

Today, in India there is 1,54,485 scheduled commercial banks are operating and 22,172 regional rural banks (RBI, 2021) are successfully operating and conducting the financial literacy camps for the rural as well as urban illiterates. Hence,

1. The banking sector should focus on the arrangement of financial literacy camps to educate the people who are still unaware of financial inclusion programs.
2. In this JAM (Jan Dhan, Aadhar and Mobile) era digital infrastructures are the future opportunity for having the inclusive growth.
3. Currently, majority of the retail payment products like., AEPS, NACH, UPI, IMPS etc. are operated by National Payments Council and card payment system, Point of Sale system etc., are authorised through Reserve Bank of India.
4. There is a need to have other stake holders instead of banks to minimise the risk in payment system and definitely the financial literacy chain system should be the moderate tool to have a sustainable economic development and inclusive financial growth.

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Retail investors' participation in Derivatives market in India

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Abstract: *The increase of the retail investors' participation in the derivatives market day by day, year to year it's increasing and the growth noted by the compound annual growth rate (CAGR). The main objectives of the study were to understand the concept of retail investors' and their participation in the derivatives market. The paper is based on the secondary data and data gathered by different working papers of BSE and NSE websites. The secondary data for retail investors' gathered till 06 July 2022. The main findings of the study were the retail investors' participation in derivatives market increasing with the compound annual growth rate of total contracts were 38.04% and the total turnover at the rate of 44.71%. It is estimated by the Investment technology market in India that by 2025, the retail investors' turnover there will rise of 7.7 billion (2022) to 14.3 (2025) billion of US dollars in India.*

Key Words: Retail investors, Derivatives market, NSE and BSE.

INTRODUCTION:

The increase in retail investors' participation, notably in the US equities markets, was one of the greatest themes in the financial markets in 2020. Brokerages reported a sharp growth in the quantity of assets being invested through their platforms and the number of new accounts. And posts from active traders discussing their trading strategies flooded social media. This action had a large spillover into the US equities options market. UBS estimates that retail trading now makes up 42% of all stock option volumes, up from 30% at the start of the year. The increase in market share is all the more astounding given that the US equities options markets achieved an all-time high for the volume of contracts traded last year. Exchanges, brokers, market makers, and numerous other derivatives industry businesses are all benefiting from the exciting new business prospects being generated by this uptick in activity. But it also brings up some really important problems. Do novice investors assume too much risk? Do they comprehend the contracts they are dealing completely? Is this rise in retail participation long-lasting or merely a passing trend? Researcher has personally observed the expansion and development of the financial markets for more than 20 years, so it's well aware of its cyclical nature. Every bull market that attracts new investors will be followed by a bear market that drives them away. However, structural forces, in my opinion, are also producing a long-term uptrend that will support continued retail engagement in derivatives markets for years to come. First off, thanks to the introduction of zero-commission trading and intense pressure on bid-ask spreads, the cost of trading has decreased to very near to \$0. People will typically use more of something as the price decreases; it's a fundamental principle of economics. Second, trading is now much more convenient thanks to innovation. In reality, utilizing the smartphone to trade stocks and options is now just as simple. There are unquestionably hazards associated with that, but there is no doubting that technology has made access to the derivatives markets more widely available.

The fact that this is an international occurrence is also crucial. There are also a sizable number of retail traders in Brazil, China, India, and Korea, and many of the top contracts on the derivatives exchanges in these nations profit from strong individual inflows. In fact, thanks in large part to retail trading, the derivatives exchanges in those nations have expanded so quickly that they now rank among the largest in the world. Regulators from all across the world have often expressed worry about the involvement of inexperienced small investors in derivative markets, either directly or through unconventional funds. For instance, the US Securities and Exchange Commission stated that "retail investors might find it challenging and difficult to comprehend and appropriately weigh the trade-offs posed by sophisticated and complex investment strategies" in its public statement on proactive regulation of derivatives released on December 11, 2015. The eligibility requirements for participation in derivative markets have recently been strengthened by South Korean market regulator Financial Services Commission. The goal of these laws, according to one of the main authorities, is to "avoid retail investors from making imprudent investments and suffering significant



losses." Similar in its thinking, the Indian market regulator Securities and Exchange Board of India (SEBI) has occasionally created regulations governing retail investors' access to the derivatives market.

Concept of Retail investors:

This term "retail investor" is defined in Section 2(zf) of the SEBI (Issue of Capital & Disclosure Requirements) Regulation, 2009, "A retail investor is an individual investor in the Indian Securities market whose subscription to securities is of a value less than Rs. 2 lakh (US \$ 3130)." It does not matter how much is that individual's existing shareholding in the market or what his present net worth is. The only condition is that at the time of subscription or bidding for shares or securities he/she should not be bidding for more than Rs. 2 lakh worth of securities.

Compared to institutional investors, individual investors make substantially smaller market investments. But in 2020–21, the markets were unexpectedly affected by their enormous numbers. Think back to January 2021, when GameStop was on the rise and the phrase "meme stock" had just been created. Reddit users sided with retail investors, boosting GameStop's stock and raising its share price by more than 1,700% since December. In fact, according to Credit Suisse, a third of all stock market activity in the US took place in. After the pandemic in 2020, active investor accounts in India surged by a record 10.4 million, signaling the beginning of a significant shift in investment trends. At the same time, the National Stock Exchange (NSE 500+)'s listed companies had a 9 percent increase in retail stock ownership in Q3 2020, the biggest increase since March 2018. With nearly 4.5 million new retail investor accounts created in just the first two months of the fiscal year, retail investor participation grew exponentially in FY21 as well. With 12.25 million new accounts being established on CDSL and 1.9 million in NSDL, the total number of retail investors surged by an astounding 14.2 million in FY21.

As a result, ordinary investors now control the majority of the Indian stock market. Retail investors' share on the NSE alone increased from 33% in 2016 to 45% in 2021. Additionally, the enthusiasm is really not diminishing as evidenced by the rise in monthly new investor registrations, which reached an all-time high of 1.5 million in June 2021. Stock trading on exchanges is only one aspect of the growth of retail investing. Individual investments in equity mutual funds have increased by 16 percent in February 2021 compared to the same month the year before, which is another increase.

OBJECTIVES OF THE STUDY: The objectives of the study are as follows:

- To understand the concept of retail investors.
- To know the participation of retail investors in derivatives market.

REVIEW OF LITERATURE:

Raju, T. K., and Pallavi, E. V. P. A. (2014). In India, the derivatives industry is experiencing exceptional growth. The statistical data shows that through 2012–2013, the total turnover of futures and options on the NSE market was Rs. 67510.02 billion and Rs. 247820.01 billion, respectively. The enhancement of derivatives buying and selling in India was significantly influenced by institutional and retail traders.

G. Tripathi (2014). Conducted a survey using a structured questionnaire with a focus on 100 retail purchasers in the Delhi/NCR region to identify the appeal and interest in particular spinoff securities among the retail investors.

S. A. M. Pasha (2013). The researcher makes an effort to understand what types of perceptions retail traders in India had based only on Andhra Pradesh State reference with a sample measurement of 500 respondents utilizing simple share bar diagrams. Financial derivatives should, in the end, be viewed as a component of any investor's risk-management strategy to ensure that price-benefiting investment opportunities are explored.

Deepika, S. R., Savitha, R., and (2013). This search aims to determine the efficacy of the emotional signs of financial derivatives in anticipating market fads (behaviour of NIFTY index). Participants in the inventory markets agree that the volume of open activity (OI) in a particular contract affects how the contract's rate is conducted.

G. Kukreja (2012). Aims to gauge how much investors value the Indian capital market in relation to the country's merchants in the National Capital Region (NCR). A total of 120 samples are used in this study. The main conclusions of this research are that tax benefits are significantly influenced by educational background and that age has a significant impact on investment. This study employs 119 specific criteria to gauge investors' perspective.

Scope of the study:

The scope of the study confined to the National stock exchange and Bombay stock exchange data on retail investors' participation in derivatives market in India about the number of registered retail investors', Retail investors' participation in top most companies and the total number of contracts as on July 2022.



RESEARCH METHODOLOGY:

The present study is based secondary data sources are listed below:

Secondary Data: The secondary data had been collected from the books, journals, magazines, annualreports and websites.

LIMITATIONS OF THE STUDY: The limitations of the study are as follows:

- The secondary data collected which is have time bound.
- As the derivatives market is daily traded market, the recent data cannot be included.

RETAIL INVESTORS IN INDIA:

Unprecedented retail interest has also been witnessed in the futures and derivatives markets. Institutional investors lost ground to individual investors in the index futures markets, which make up a significant portion of the Indian derivatives market. In fact, individual investors surpassed institutions in 39 percent of the index futures markets, which make up a significant portion of the Indian derivatives market. Retail investors really make up 39% of the index futures market, with foreign investors (FIIs) making up only 15%. Individual investing is becoming more popular among Indians, who are moving away from their traditional preference for physical assets like gold and real estate as well as bank accounts.

Although India has had a boom in retail investments before, this is unquestionably the first time that newcomers from areas other than Delhi and Mumbai are participating in the financial markets. Smaller towns and cities around the nation are bringing in a growing number of new clients for brokers and financial firms. Although the northern and western Indian areas continue to dominate in terms of the overall number of new registrants, the investing pattern has shifted among regions over the past two years. As of June 2021, Northern India made up around 37% of all registrations, and retail interest increased in East and South India compared to 2020.

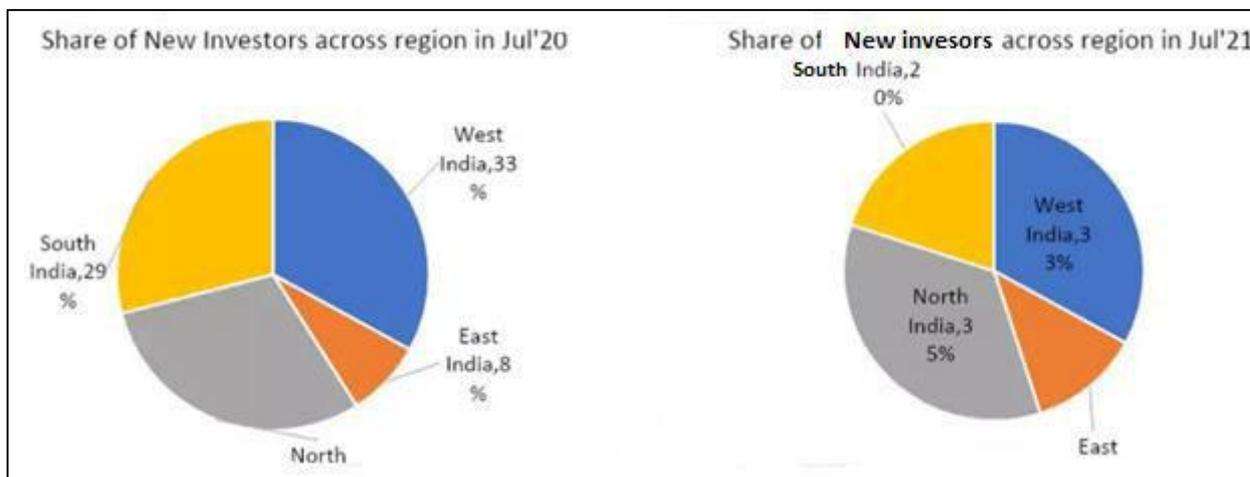


Figure 1: New Retail investors in India

Source: https://www.business-standard.com/article/opinion/retail-investors-and-derivative-market118081900727_1.html#:~:text=This%20means%20that%20retail%20investors,of%20retail%20investors%20enhances%20liquidity.

Table 1: Retail investor’s participation in Derivatives market

Year	Total Contracts	Total Turnover	Contracts	Value	Avg. Turnover	Daily	Trading Days
2003-2004	143224	5021.81	35	-	19.77		254
2004-2005	531719	16112.32	22	-	63.69		253
2005-2006	203	8.78	-	-	0.03		251
2006-2007	1781220	59006.62	408	-	236.97		249
2007-2008	7453371	242308.41	3175	52.02	965.37		251
2008-2009	496502	11774.83	22	0.31	48.46		243



2009-2010	9028	234.06	-	0.11	0.96	244
2010-2011	5623	154.33	4	0.12	0.61	255
2011-2012	32222825	808475.99	28176	735.68	3246.89	249
2012-2013	262440691	7163576.66	90076	2299.16	28654.31	250
2013-2014	301942441	9219434.32	18692	602.61	36730.81	251
2014-2015	505478869	20362741.42	26719	1001.25	83797.29	243
2015-2016	106209394	4475008.32	68	3.47	18117.44	247
2016-2017	123538	6939.29	107	7.71	27.98	248
2017-2018	44701	3262.66	2	0.12	13.26	246
2018-2019	31167	2250.11	9	0.67	9.07	248
2019-2020	2681883	262268.62	515	37.94	1061.82	247
2020-2021	338160958	35060169.07	1895	218.48	141371.65	248
2021-2022	670521024	66078327.85	104	9.52	266444.87	248
2022-2023	90392628	8142090.51	1366	113.35	125262.93	65
CAGR	38.04%	44.71%	-	-	-	-

Source: NSE website

From the above analyzed data, the Compound annual growth rate (CAGR) from 2003-04 to 2022-23, the total contract size rate at 38.04% and the contracts turnover rate at 44.71% the consistent growth taken from the side of retail investors. If this will continue, the retail investor plays a major role in the derivatives market than institutional investors.

Table 2: Registered Retail investors in NSE till 06 July 2022

State	No of Clients	Change Over Prev. Month (%)	Change Over Prev. Quarter (%)	Change Over Prev. Year (%)
Andaman and Nicobar	18145	430(2.43%)	1610(9.74%)	7696(73.65%)
Andhra Pradesh	4978825	70427(1.43%)	250224(5.29%)	1262636(33.98%)
Army Post Office	2091	-14(-0.67%)	-15(-0.71%)	-22(-1.04%)
Arunachal Pradesh	28334	1035(3.79%)	3408(13.67%)	14034(98.14%)
Assam	2259271	50137(2.27%)	236638(11.70%)	1395285(161.49%)
Bihar	3497320	96300(2.83%)	337655(10.69%)	1722399(97.04%)
Chandigarh	287120	3528(1.24%)	13030(4.75%)	65546(29.58%)
Chhattisgarh	1033758	26869(2.67%)	92219(9.79%)	424602(69.70%)
Dadra and Nagar Haveli	35370	663(1.91%)	2487(7.56%)	13323(60.43%)
Daman and Diu	24645	467(1.93%)	1669(7.26%)	9042(57.95%)
Delhi	5233320	80972(1.57%)	291546(5.90%)	1390017(36.17%)
Goa	237564	3492(1.49%)	12133(5.38%)	64553(37.31%)
Gujarat	11445504	133262(1.18%)	469237(4.28%)	2659961(30.28%)
Haryana	3527238	70899(2.05%)	265703(8.15%)	1308995(59.01%)
Himachal Pradesh	534656	11507(2.20%)	46310(9.48%)	227092(73.84%)
Jammu and Kashmir	435289	8790(2.06%)	37924(9.54%)	177929(69.14%)
Jharkhand	1696214	34200(2.06%)	119236(7.56%)	665827(64.62%)



Karnataka	6242720	102773(1.67%)	344910(5.85%)	1862836(42.53%)
Kerala	2630829	40380(1.56%)	121834(4.86%)	620294(30.85%)
Ladakh	178	9(5.33%)	23(14.84%)	(%)
Lakshadweep	1067	43(4.20%)	103(10.68%)	559(110.04%)
Madhya Pradesh	5213774	125618(2.47%)	472298(9.96%)	2487155(91.22%)
Maharashtra	22236320	348200(1.59%)	1209732(5.75%)	6724514(43.35%)
Manipur	102751	2198(2.19%)	7234(7.57%)	38222(59.23%)
Meghalaya	48313	1283(2.73%)	4529(10.34%)	20788(75.52%)
Mizoram	11074	324(3.01%)	990(9.82%)	4582(70.58%)
N D	581905	-26856(-4.41%)	13150(2.31%)	-6926(-1.18%)
Nagaland	32232	857(2.73%)	3127(10.74%)	14219(78.94%)
Odisha	2360316	54879(2.38%)	215920(10.07%)	1124991(91.07%)
Pondicherry	100559	1558(1.57%)	5127(5.37%)	25153(33.36%)
Punjab	2465704	56361(2.34%)	205761(9.10%)	870589(54.58%)
Rajasthan	6215949	119211(1.96%)	453702(7.87%)	2560680(70.05%)
Sikkim	27777	593(2.18%)	2160(8.43%)	9544(52.34%)
Tamil Nadu	5699594	84078(1.50%)	282092(5.21%)	1332896(30.52%)
Telangana	3366630	60986(1.84%)	219307(6.97%)	1193483(54.92%)
Tripura	117392	3492(3.07%)	11431(10.79%)	50570(75.68%)
Uttar Pradesh	9717446	261802(2.77%)	925708(10.53%)	4207359(76.36%)
Uttarakhand	929688	20387(2.24%)	74988(8.77%)	366551(65.09%)
West Bengal	5805050	116026(2.04%)	407709(7.55%)	1744435(42.96%)
Total	109181932	1967166(1.83%)	7162849(7.02%)	36661409(50.55%)

Source: BSE website

Table 3: Retail investor's participation in Top most 50 companies

Rank	Name of the security	Turnover ₹ (crore)	% Share in Total turnover	Market Capitalization ₹ (crore)	% Share in Total Market Capitalization
1	Reliance Industries Ltd	817890	5.31	1269854	6.26
2	Bajaj Finance Limited	543688	3.53	310323	1.53
3	HDFC Bank Ltd	395299	2.57	823416	4.06
4	ICICI Bank Ltd.	363185	2.36	402549	1.98
5	Axis Bank Limited	348207	2.26	213656	1.05
6	State Bank Of India	347898	2.26	325124	1.6
7	Tata Motors Limited	347549	2.26	100207	0.49
8	Indus Ind Bank Limited	310277	2.02	73794	0.36
9	Bharti Airtel Limited	286151	1.86	284103	1.4
10	HDFC Ltd	266878	1.73	449960	2.22
11	Infosys Limited	262131	1.7	582774	2.87
12	Tata Consultancy Serv Lt	250032	1.62	1175503	5.79
13	Tata Steel Limited	217327	1.41	91454	0.45
14	Maruti Suzuki India Ltd.	215338	1.4	207203	1.02
15	Kotak Mahindra Bank Ltd	211904	1.38	347378	1.71



16	Hindustan Unilever Ltd.	202518	1.32	571297	2.81
17	Dr. Reddy's Laboratories	179555	1.17	75101	0.37
18	ITC Ltd	160199	1.04	268927	1.33
19	Bajaj Finserv Ltd.	151164	0.98	153864	0.76
20	HCL Technologies Ltd	143212	0.93	266658	1.31
21	Larsen & Toubro Ltd.	139090	0.9	199275	0.98
22	Sun Pharmaceutical Ind L	135598	0.88	143432	0.71
23	Cipla Ltd	134271	0.87	65735	0.32
24	Asian Paints Limited	130878	0.85	243387	1.2
25	Zee Entertainment Ent Ltd	124132	0.81	19517	0.1
26	RBL Bank Limited	116540	0.76	12412	0.06
27	Wipro Ltd	115941	0.75	226917	1.12
28	Hero Motocorp Limited	110662	0.72	58208	0.29
29	IndiabullsHsg Fin Ltd	109810	0.71	9085	0.04
30	Bharat Petroleum Corp Lt	109279	0.71	92833	0.46
31	Bandhan Bank Limited	107498	0.7	54583	0.27
32	Eicher Motors Ltd	107132	0.7	71175	0.35
33	Mahindra & Mahindra Ltd	101508	0.66	98865	0.49
34	Shriram Transport Fin Co.	101371	0.66	35993	0.18
35	Vodafone Idea Limited	96709	0.63	26580	0.13
36	Tech Mahindra Limited	96622	0.63	95998	0.47
37	UPL Limited	93922	0.61	49040	0.24
38	Titan Company Limited	91981	0.6	138322	0.68
39	Vedanta Limited	89927	0.58	85031	0.42
40	Hindalco Industries Ltd	88424	0.57	73433	0.36
41	Aurobindo Pharma Ltd	88186	0.57	51639	0.25
42	Divi's Laboratories Ltd	86639	0.56	96174	0.47
43	Lupin Limited	85689	0.56	46293	0.23
44	Adani Port & Sez Ltd	84432	0.55	142710	0.7
45	Ultratech Cement Limited	78738	0.51	194485	0.96
46	Ashok Leyland Ltd	76137	0.49	33318	0.16
47	Bajaj Auto Limited	72549	0.47	106215	0.52
48	Britannia Industries Ltd	70787	0.46	87316	0.43
49	Muthoot Finance Limited	70696	0.46	48379	0.24
50	DLF Limited	70508	0.46	71054	0.35

Source: NSE website



Table 4: Total derivatives traded contracts by Retail investors' from April 2021 to March 2022

Month/Year	Index / Stock Futures		Index / Stock Options		Total
	MTM Settlement	Final Settlement	Premium Settlement	Exercise Settlement	
Apr-21	16413.12	112.23	3572.12	662.55	20760.02
May-21	13415.8	67.21	3199.27	539.99	17222.27
Jun-21	12482.87	137.13	3222.67	466.15	16308.82
Jul-21	12138.44	225.51	2814.06	488.09	15666.1
Aug-21	16361.46	108.13	3359.54	572.07	20401.2
Sep-21	15610.12	126.58	4366.84	1023.96	21127.5
Oct-21	23745.58	563.35	5017.53	699.95	30026.42
Nov-21	23039.67	160.59	4286.27	475.43	27961.97
Jan-22	21705.8	644.51	5285.09	744.73	28380.13
Feb-22	34087.02	1590.09	6194.05	946.33	42817.49
Mar-22	25506.89	91.79	7421.61	1101.7	34121
CAGR					64.36%

Source: NSE website

From the above analyzed data, the Compound annual growth rate (CAGR) from April 2021 to March 2022, the total stock / index futures and options contract size rate at 64.36% the steady growth taken from the side of retail investors.

Table 5: Total futures and options contracts made by Retail investors as on 6 July 2022

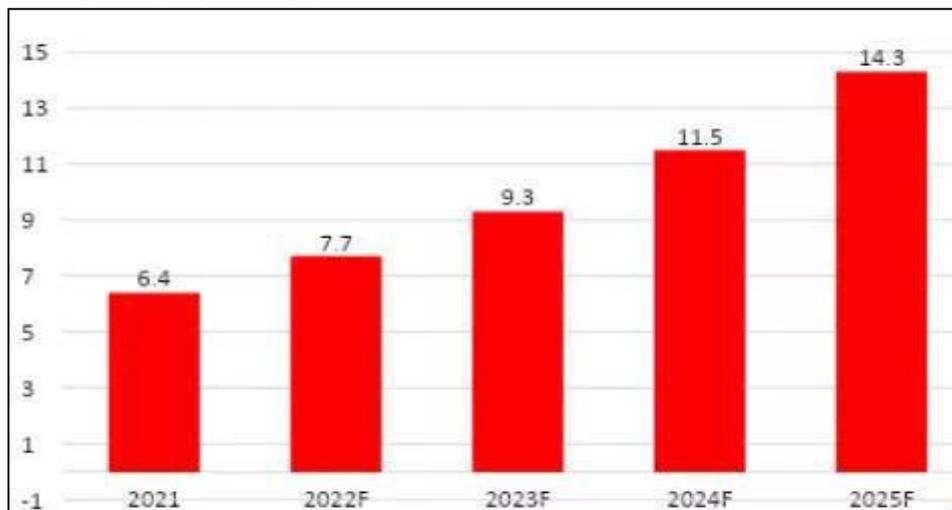
Product	No. of contracts	Turnover (cr.)*	Premium Turnover (cr.)
Index Futures	4,01,070	33,446.14	-
Stock Futures	7,78,962	48,043.16	-
Index Options	24,89,57,365	2,09,05,997.32	39,482.32
Stock Options	24,18,854	1,56,246.13	3,138.86
F&O Total	25,25,56,251	2,11,43,732.75	42,621.19

Source: NSE website

RETAIL INVESTORS IN FUTURE:

The epidemic has probably been a major factor in the tremendous rise in individual investors. Around the world, people have noticed this trend. Millions of people were stranded at home in search of methods to improve their financial circumstances due to wage cuts, job losses, and an unclear economic future. But without the aid of technology, the pandemic alone couldn't have had such a big impact. First off, Indians now have access to a whole new universe of online content thanks to the spread of the internet to even the most rural regions of the country. This also means greater accessibility to investing education, market news and growing understanding of various forms of investment. Furthermore, a sizeable portion of investors from tier 2 and tier 3 cities now have access to more modern asset classes and methods of portfolio diversification. The shifting investment environment in India has been significantly impacted by the influx of investors from smaller towns and cities.

Figure 2: Investment Tech market in India



Source: https://www.business-standard.com/article/opinion/retail-investors-and-derivative-market118081900727_1.html#:~:text=This%20means%20that%20retail%20investors,of%20retail%20investors%20enhances%20liquidity.

The development of technology has also given investors access to powerful online trading tools that provide transparency and real-time price movement information. Real-time transaction execution was formerly uncommon because the sole way to contact the markets was by making numerous phone calls to brokers and other market participants. Easy-to-use investment apps have also been made possible by technological improvements, and social media has made it possible to access all of the discussion in the investment community. There are sizable and extremely active investor communities on Twitter, Telegram, Reddit, and other platforms who are always willing to share their market analyses and investing opinions. Low interest rates have also diminished the appeal of traditional investment options like fixed deposits and debt instruments. Investors are searching for new opportunities that will provide profits that are inflation-proof. So, is this a passing phenomenon that will go away as the economy heals, or is it the start of a global and Indian behavioural shift? Retail investors appear to be here to stay and to be increasing in number. Growing numbers of millennials and Gen Zers entering the financial markets will fuel this transformation. Compared to their predecessors, they take a radically different approach to investing. In fact, some analysts believe that online trade in India might reach a value of \$14.3 billion by 2025 as a result of the continued growth of the digital infrastructure and the influx of new digital natives into the market.

CONCLUSION:

Retail investors who just recently entered the market have not yet been put to the test and their trades and investments have largely succeeded throughout this point due to the bullish trend, but they must now prepare for difficulties. Industry insiders claim that certain discount brokers created generous referral incentives that helped businesses stay profitable. Because of the retail rush, corporations have not been discouraged by the Securities and Exchange Board of India's (SEBI) stricter margin requirements. The standards have made sure that retail traders do not have access to loans for transactions they cannot afford, lowering risks to the system. The standards force investors to bring in margin money upfront before trading. Many of these novice traders have switched to option buying since the stricter margin requirement prevents them from selling futures and options.

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CONSTITUTIONAL PROVISIONS ON LEGAL AID IN INDIA

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Abstract: *Constitution has given so many rights for the welfare of the people among them free legal aid is one of the fundamental rights guaranteed to all the citizens of the country. Article 21 and 39A of the Indian Constitution provides for free legal aid to the poor and weaker sections of the society, to promote justice on the basis of equal opportunity. Legal aid is regarded as one of the important tool to access to justice by ensuring -Equality before the law -Right to counsel - Right to Fair trial. It is to ensure welfare provisions by providing access to legal advice and the courts. Legal Aid providing free legal services to the poor and needy peoples who are unable to afford the services of an advocate for the conduct of a case or a legal proceeding in any court, tribunal or before an Judicial authority. The Legal Services Authorities Act, to constitute legal services authorities to provide free and competent legal service to the weaker sections of the society to ensure that opportunities for securing justice are not denied to any citizens by reason of economic or other disabilities. This paper based on the doctrinal method collection of data from primary and secondary data, this paper mainly focus on the international national provisions in international provisions convention and declaration in national provisions Constitution and other legal provisions judicial contribution also.*

Key Words: *Free Legal Aid, International Convention and Declaration, Constitution.*

INTRODUCTION:

Legal Aid which means giving free legal services to the poor and needy who are unable to afford the services of an advocate for the conduct of a case or a legal proceeding in any court, tribunal or before an Judicial authority. An act to constitute legal services authorities to provide free and competent legal service to the weaker sections of the society to ensure that opportunities for securing justice are not denied to any citizens by reason of economic or other disabilities. Legal aid is a Constitutional right supported by Articles 21¹ and 39-A² of the Indian Constitution. Free legal aid is one of the fundamental rights guaranteed to all the citizens of the country. Article 21 and Article 39A of the Constitution of India provides for free legal aid to the poor and weaker sections of the society, to promote justice on the basis of equal opportunity. Legal aid in India has been incorporated under Article 39A of the Indian Constitution and Legal Services Authorities Act, 1987. The 'Legal Services Authorities Act' was enacted by Parliament, it provide nationwide uniform network for providing free and competent legal services to the weaker sections of the society. The National Legal Services Authority (NALSA) has been constituted under the Legal Services Authorities Act, 1987 to provide free legal services to weaker sections of the society.

CONCEPTUALIZATION LEGAL AID:

The Legal Services Authorities Act, 1987, Section 2(1)(c) define the term "Legal Service" includes the rendering of any service in the conduct of any case or other legal proceeding before any court or other authority or tribunal and the giving of advice on any legal matter; To provide free and competent legal services to the weaker section of the society is the basic object of enacting the aforesaid Act. Justice - social, economic and political, is our Constitutional pledge enshrined in the Preamble of the Indian Constitution. The incorporation of Article 39-A in the Directive Principles of State Policy, enjoined upon the State to ensure justice on the basis of equal opportunity by

¹ Article 21. Protection of life and personal liberty No person shall be deprived of his life or personal liberty except according to procedure established by law

²Article 39A, The State shall secure that the operation of the legal system promotes justice, on a basis of equal opportunity, and shall, in particular, provide free legal aid, by suitable legislation or schemes or in any other way, to ensure that opportunities for securing justice are not denied to any citizen by reason of economic or other disabilities, this article was inserted by the Constitution (Forty- Second Amendment) Act 1976.



providing free legal aid. The assumption of our legal system is that all citizens have equal access to means of legal redress. Access to inexpensive and expeditious justice is a basic human right. But, in practice, legal services of all kinds have gone to the highest bidders. Wealthy persons and large corporations receive the highest quality advice. There should be a system of administration of justice of which the poorest are able to take advantage. Equal access to the law for the rich and the poor alike is essential for the maintenance of the rule of law.

Legal aid is required in many forms and at various stages, for obtaining guidance, for resolving disputes in Courts, tribunals or other authorities. The explosion in population, the vast changes brought about by scientific, technological and other developments, and the all round enlarged field of human activity reflected in modern society and the consequent increase in litigation in Courts and other forums demand that the service of competent persons with expertise in law is required in many stages and at different forums or levels and should be made available.

International provisions on legal aid

In order to have an idea regarding the right to have fair trial, we can have a look on various human right conventions and charters at global level. Here brief mentioned few important provisions on the concept of fair trial from some of the very important human right conventions like Universal Declaration on Human Right, United Nations Convention on Civil and Political Right, the European Convention for the Protection of Human Rights and Fundamental Freedoms, 1950.

Universal Declaration of Human Rights, 1948:

Article 7 of UDHR recognizes all are equal before law and are entitled to equal Protection of law without any discrimination.

Article 8 recognizes everyone's right to an effective remedy by the competent national Tribunals for acts violating the fundamental rights granted him by the constitution or by law.

Article 10 entitled everyone rights to a fair and public hearing by an independent Tribunal.

Article 11(1) refers everyone's rights to be considered innocent until proven guilty According to law in a public trial.

International Covenant on Civil and Political Rights, 1966:

Article 14(1) recognizes that all persons are equal before the courts and tribunals in the hearing of civil actions and criminal charges

Article 14(2): Everyone charged with a criminal offence shall have the right to be presumed innocent until proved guilty according to law.

Article 14(3): In the determination of any criminal charge against him, everyone shall be entitled to the following minimum guarantees, in full equality:

- To be informed promptly and in detail in a language which he understands of the nature and cause of the charge against him;
- To have adequate time and facilities for the preparation of his defense and to communicate with counsel of his own choosing;
- To be tried without undue delay;
- To be tried in his presence, and to defend himself in person or through legal assistance of his own choosing; to be informed, if he does not have legal assistance, of this right; and to have legal assistance assigned to him, in any case where the interests of justice so require, and without payment by him in any such case if he does not have sufficient means to pay it;
- To examine, or have examined the witnesses against him and to obtain the attendance and examination of witnesses on his behalf under the same conditions as witnesses against him;
- To have free assistance of an interpreter if he cannot understand or speak the language used in court.

The European Convention for the Protection of Human Rights and Fundamental Freedoms, 1950:

Article 6: Right to Fair Trial. It reads:

1. In the determination of his civil rights and obligations or of any criminal charge against him, everyone is entitled to a fair and public hearing within a reasonable time by an independent and impartial tribunal established by law.
2. Everyone charged with a criminal offence shall be presumed innocent until proved guilty according to law.
3. Everyone charged with a criminal offence has the following minimum rights:
 - a. To be informed promptly, in a language which he understands in detail, of the nature and cause of the accusation against him;
 - b. To have adequate time and facilities for the preparation of his defense;



- c. To defend himself in person or through legal assistance of his own choosing or, if he has not sufficient means to pay for legal assistance, to be given it free when the interests of justice so require;
- d. To examine or have examined witnesses against him and to obtain the attendance and examination of witnesses on his behalf under the same conditions as witnesses against him;
- e. To have the free assistance of an interpreter if he cannot understand or speak the language used in court.

All the conventions and charters mentioned above talks about a criminal justice system which does not incriminate a person unless his crime is proved beyond all doubt. The accused should be given all opportunity to represent his case in proper way in public trial, and then only a person may be held guilty. All these rights mentioned in all this supremely important international documents related to fair trial will be of no use if a person is not given proper scope to represent himself. In a world where though the ignorance of law is no excuse, yet very few are actually aware about the law in truest sense of term, no one can represent himself or herself properly unless that person is assisted by someone acquainted with the terms and jargons of law. Thus to prevent the notion of fair trial from becoming dead letter the alleged accused or retractor of law is required to be represented by someone who knows and can practice law that is an advocate or a lawyer.

Legal Aid provisions under Indian Constitution:

The Constitution is the supreme law of India. It incorporated various provisions of UDHR, 1948 for streamlining

- Human rights and fundamental freedom,
- Civil and political rights and
- Economic, social and cultural rights for its citizens.

Part - III of Indian Constitution recognises the fundamental rights and also contains the civil and political rights of the people that are guaranteed are judicially enforceable. The fundamental right provides a number of safeguards to the society.

Some of them are –

- Equality before the law.
- Right to protection of law.
- Right to life and personal liberty.
- Safeguards as to arrest and detention.
- Right to speedy and fair trial - Every person accused of a criminal offence shall have the right to a speedy and public trial by an independent and impartial court established by law.
- No person in a case against him can be his own witness.

Article 39(A) of the Indian Constitution states that, The state shall secure the operation of the legal system that shall promote justice, on the basis of equal opportunity, and shall especially, provide free legal aid, by appropriate legislation or schemes, to ensure that opportunities for securing justice are not denied to any citizen by reason of economic or other disability.” Articles 14³ and 22(1)⁴ of Indian Constitution also make it obligatory for the State to ensure equality before law and a legal system which shall promotes justice on a basis of equal opportunity to all. In that sense “Legal aid” strives to ensure that the constitutional pledge is fulfilled in its letter and spirit and equal justice is made available to the poor as well as downtrodden and weaker sections of the society.

Legal Aid in India: Statutory Recognition:

Though there was a statutory procedure providing free legal aid⁵ by appointing the advocate for defending criminal case and by exempting court fees in civil cases, it was not really making any significant impact on the ability of the underprivileged people to get the judicial redressal for their grievances. Hence under tremendous constitutional persuasion from the Supreme Court the Legal Services Authorities Act, 1987 was passed by the parliament of India. The Act prescribes the criteria for giving legal services to the eligible persons. It makes a person eligible for assistance under the act if he is –

- a. a member of a Scheduled Caste or Scheduled Tribe;
- b. a victim of trafficking in human beings or begar as referred to in Article 23⁶ of the Constitution;

³ Article 14, Equality before law The State shall not deny to any person equality before the law or the equal protection of the laws within the territory of India Prohibition of discrimination on grounds of religion, race, caste, sex or place of birth

⁴Article 22(1), No person who is arrested shall be detained in custody without being informed, as soon as may be, of the grounds for such arrest nor shall he be denied the right to consult, and to be defended by, a legal practitioner of his choice.

⁵ Section 304(1) of Code of Criminal Procedure and Order 33, Rule 17 of Code of Civil Procedure

⁶ 23. Prohibition of traffic in human beings and forced labour



- c. a woman or a child;
- d. a mentally ill or otherwise disabled person;
- e. a person under circumstances of undeserved want such as being a victim of a mass disaster, ethnic violence, caste atrocity, flood, drought, earthquake or industrial disaster; or
- f. an industrial workman; or
- g. in custody, including custody in a protective home or in a juvenile home
- h. of in a psychiatric hospital or psychiatric nursing home within the meaning of clause of section 2 of the Mental Health Act, 1987; or
- i. A person whose annual income less than rupees fifty thousand or such other higher amount as may be prescribed by the State Government⁷. This limit on income can be increased by the state governments. Limitation as to the income does not apply in the case of persons belonging to the scheduled castes, scheduled tribes, women, children, handicapped, etc. Thus by this the Indian Parliament took a step forward in making the legal aid possible in the country.

According to the Act the 'court' is a civil, criminal or revenue court and includes any tribunal or any other authority constituted under any law for the time being in force, to exercise judicial or quasi-judicial functions⁸. Under the Act 'legal service' includes the rendering of any service in the conduct of any case or other legal proceeding before any court or other authority or tribunal and the giving of advice on any legal matter⁹. Legal Services Authorities after examining the eligibility criteria of an applicant and the existence of a prima facie case in his favour provide him counsel at State expense, pay the required Court Fee in the matter and bear all incidental expenses in connection with the case. The person to whom legal aid is provided is not called upon to spend anything on the litigation once it is supported by a Legal Services Authority.

BODIES UNDER THE ACT AND THEIR HIERARCHY:

A nationwide network has been envisaged under the Act for providing legal aid and assistance. National Legal Services Authority is the apex body constituted to lay down policies and principles for making legal services available under the provisions of the Act and to frame most effective and economical schemes for legal services.

In every State a State Legal Services Authority is constituted to give effect to the policies and directions of the Central Authority (NALSA) and to give legal services to the people and conduct Lok Adalats in the State. State Legal Services Authority is headed by the Chief Justice of the State High Court who is its Patron-in-Chief. A serving or retired Judge of the High Court is nominated as its Executive Chairman.

District Legal Services Authority is constituted in every District to implement Legal Aid Programmes and Schemes in the District. The District Judge of the District is its ex-officio Chairman.

Taluk Legal Services Committees are also constituted for each of the Taluk or Mandal or for group of Taluk or Mandals to coordinate the activities of legal services in the Taluk and to organize Lok Adalats. Every Taluk Legal Services Committee is headed by a senior Civil Judge operating within the jurisdiction of the Committee who is its ex-officio Chairman.

In order to provide free and competent legal service, the NALSA has framed the National Legal Service Authority (Free and competent Legal service) Regulations, 2010. The salient feature of Regulation is engaging senior competent lawyers on payment of regular fees in special cases like where the life and liberty of a person are in jeopardy.

Supreme Court of India has also set up Supreme Court Legal Services Committee (SCLSC) to ensure free legal aid to poor and under privileged under the Legal Services Authorities Act. It is headed by a judge of Supreme Court of India and has distinguished members nominated by Chief justice of India. The SCLSC has a panel of competent Advocates on record with certain minimum number of years of experience who handle the cases in the Supreme Court. Apart from that the SCLSC has full time Legal Consultant who provides legal advise to poor litigants either on personal visit or through the post.

(1) Traffic in human beings and begar and other similar forms of forced labour are prohibited and any contravention of this provision shall be an offence punishable in accordance with law

(2) Nothing in this article shall prevent the State from imposing compulsory service for public purpose, and in imposing such service the State shall not make any discrimination on grounds only of religion, race, caste or class or any of them

⁷ Section 12 of the Legal Services Authorities Act, 1987.

⁸ Section 2(1) (a) of the Legal Service Authority Act, 1987.

⁹ Section 2(1)(c) of the Legal Service Authority Act, 1987.



FREE LEGAL AID IN INDIA: THE POSITIVE CONTRIBUTION OF JUDICIARY:

The Supreme Court of India got a major opportunity to make an emphatic pronouncement regarding the rights of the poor and indigent in judgment of *Hussainara Khatoon*¹⁰, where the petitioner brought to the notice of Supreme Court that most of the under trails have already under gone the punishment much more than what they would have got had they been convicted without any delay. The delay was caused due to inability of the persons involved to engage a legal counsel to defend them in the court and the main reason behind their inability was their poverty. Thus, in this case the court pointed out that Article 39-A emphasized that free legal service was an inalienable element of reasonable, fair and just‘ procedure and that the right to free legal services was implicit in the guarantee of Article 21.

Two years later, in the case of *Khatri v. State of Bihar*¹¹, the court answered the question the right to free legal aid to poor or indigent accused who are incapable of engaging lawyers. It held that the state is constitutionally bound to provide such aid not only at the stage of trial but also when they are first produced before the magistrate or remanded from time to time and that such a right cannot be denied on the ground of financial constraints or administrative inability or that the accused did not ask for it. Magistrates and Sessions Judges must inform the accused of such rights. The right to free legal services is an essential ingredient of reasonable, fair and just procedure for a person accused of an offence and it must be held implicit in the guarantee of Article 21 and the State is under a Constitutional mandate to provide a lawyer to an accused person if the circumstances of the case and the needs of justice so require. The State cannot avoid this obligation by pleading financial or administrative inability or that none of the aggrieved prisoners asked for any legal aid.

In *Suk Das v. Union Territory of Arunachal Pradesh*¹², Justice P.N. Bhagwati, emphasized the need of the creating the legal awareness to the poor as they do not know the their rights more particularly right to free legal aid and further observed that in India most of the people are living in rural areas are illiterates and are not aware of the rights conferred upon them by law. Even literate people do not know what are their rights and entitlements under the law. It is this absence of legal awareness they are not approaching a lawyer for consultation and advice. Moreover, because of their ignorance and illiteracy, they cannot become self-reliant and they cannot even help themselves. That is why promotion of legal literacy has always been recognized as one of the principal items of the program of the legal aid movement in the country. I would say that even right to education would not fulfill its real objective if education about legal entitlements is not made accessible to people and our constitutional promise of bringing justice to the door stepson the people would remain an illusion. Justice Krishna Iyer, who is crusader of social justice in India, had rightly said that ‘if a prisoner sentenced to imprisonment is virtually unable to exercise his constitutional and statutory right of appeal inclusive of special leave to the Supreme Court for want of legal assistance, there is implicit in the Court under Article 142 read with Articles 21 and 39-A of the Constitution, the power to assign counsel for such imprisoned individual’ for doing complete justice‘.¹³ It is a statutorily recognized public duty of each great branch of government to obey the rule of law and uphold the tryst with the constitution by making rules to effectuate legislation meant to help the poor.¹⁴ Though the law has been enacted to protect the poor the governments are lazy to implement the enacted law. The same was observed by Supreme Court in *State of Haryana v. Darshana Devi*¹⁵, that “the poor shall not be priced out of the justice market by insistence on court-fee and refusal to apply the exemptive provisions of order XXXIII¹⁶, CPC”. The state of Haryana, mindless of the mandate of equal justice to the indigent under the Magna Carta¹⁷ of republic, expressed in article 14 and stressed in article 39A of the Constitution, has sought leave to appeal against the order of the high court which has rightly extended the ‘pauper’ provisions to auto-accident claims. Order XXXIII will apply to tribunals, which have the trappings of the civil court...even court also expressed its poignant feeling that —no state has, as yet, framed rules to give effect to the benignant provision of legal aid to the poor in order xxxiii, rule 9A¹⁸, civil procedure code, although several years have passed since the enactment.

¹⁰ *Hussainara Khatoon v. State of Bihar*, (1980) 1 SCC 98.

¹¹ *Khatri v. State of Bihar*, AIR 1981 SC 262.

¹² AIR 1986 SC 991.

¹³ *M.H. Hoskot v. State of Maharashtra* (1978) 3 SCC 81.

¹⁴ Order 33, Rule 9A, Code Civil Procedure, 1908.

¹⁵ AIR 1972 SC 855.

¹⁶ Order 33 of CPC (suits by indigent persons)

¹⁷ The Magna Carta (“Great Charter”) is a document guaranteeing English political liberties that was drafted at Runnymede, a meadow by the River Thames, and signed by King John on June 15, 1215, under pressure from his rebellious barons. By declaring the sovereign to be subject to the rule of law and documenting the liberties held by “free men,” it provided the foundation for individual rights in Anglo-American jurisprudence.

¹⁸ Order xxxiii, rule 9A 9A. Court to assign a pleader to an unrepresented indigent person.



Parliament is stultified and the people are frustrated. Even after a law has been enacted for the benefit of the poor, the state does not bring it into force by wilful default.

CONCLUSION:

Legal aid is not a charity or bounty, but is an obligation of the state and right of the citizens. The prime object of the state should be —equal justice for all. Thus, legal aid strives to ensure that the Constitutional pledge is fulfilled in its letter and spirit and equal justice is made available to the downtrodden and weaker sections of the society. But in spite of the fact that free legal aid has been held to be necessary adjunct of the rule of law, the legal aid movement has not achieved its goal. There is a wide gap between the goals set and met. The major obstacle to the legal aid movement in India is the lack of legal awareness. People are still not aware of their basic rights due to which the legal aid movement has not achieved its goal yet. It is the absence of legal awareness which leads to exploitation and deprivation of rights and benefits of the poor.

SUGGESTIONS:

- It is suggested that it is the need of the hour that the poor illiterate people should be imparted with legal knowledge and should be educated on their basic rights which should be done from the grass root level of the country. For that judiciary needs the support from state administration to conduct legal literacy programme.
- The judiciary should focus more on Legal Aid because it is essential in this present scenario where gulf between haves and have-nots is increasing day by day. And elimination of social and structural discrimination against the poor will be achieved when free Legal Aid is used as an important tool in bringing about distributive justice.
- There are number of precedents as well as legislations to up hold, the right to free legal aid but they have just proven to be a myth for the masses due to their ineffective implementation. Thus the need of the hour is that one should need to focus on effective and proper implementation of the laws which are already in place instead of passing new legislations to make legal aid in the country a reality instead of just a myth in the minds of the countrymen.
- In providing Legal Aid, the Legal Aid institutions at all level should use proper ADR methods so as to speed up the process of compromise between parties to the case and with that matter will be settled without further appeal.
- Free Legal Services Authorities must be provided with sufficient funds by the State because no one should be deprived of professional advice and advice due to lack of funds.

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AGRICULTURAL SUBSIDIES IN KARNATAKA: AN ANALYSIS OF ITS IMPACT ON BAGALKOTE FARMERS

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Abstract: India ranks second worldwide in farm output. Agriculture and allied sectors like forestry, logging and fishing accounted for 17% of the GDP and employed 51% of the total workforce in 2012. As Indian economy has diversified and grown, agriculture's contribution to GDP has steadily declined from 1951 to 2011, yet it is still the largest employment source and a significant piece of the overall socio-economic development of India. Agriculture is a very integral part in the socio-economic fabric in influencing the deprived and the economically backward sections of the society. The support extended by the Government of India in providing the agricultural subsidies, in fact is a very significant support system to the farmers. The agricultural subsidy has revived the agricultural sector but the absolute contribution to the SC/ST farmers in comparison with the other sections is still to be explored and issues of social justice and equity be ensured. The present study considers subsidies direct subsidy and indirect subsidy in the districts of Bagalkot and Vijayapur. It throws light on the gaps in the existing disbursal system and the recommendations to better the present system.

Key Words: Subsidy, Social Security, Cost, Retune, subsidy level, Land holding farmer.

INTRODUCTION:

Agriculture plays a pivotal role in the Indian economy. Although its contribution to Gross Domestic Product (GDP) is now around eighteen, (2014) it provides employment to 50 per cent (2014) of the Indian workforce. Also, the forward and backward linkage effects of agriculture growth increase the incomes in the non-agriculture sector. The growth of some commercial crops has significant potential for promoting exports of agricultural commodities and bringing about faster development of agro-based industries. Thus agriculture not only contributes to overall growth of the economy but also reduces poverty by providing employment and food security to the majority of the population in the country and thus it is the most inclusive growth sectors of the Indian economy. The 12th Five Year Plan Approach Paper also indicates that agricultural development is an important component of faster, more inclusive sustainable growth approach.

However, there have been exclusion problems in the country. In other words, real development in terms of growth shared by all sections of the population has not taken place. We have problems of poverty, unemployment, inequalities in access to health and education and poor performance of agriculture sector. One of the excluded sectors during the reform period was agriculture which showed low growth and experienced more farmers' suicides. The agriculture subsidies are integral part of the farmer's life in India. The agriculture subsidies plays very important role in agriculture sector in every country. The every year's government of India spends lot of money in various agriculture subsidies for growth of agriculture sector. The total arable & permanent cropland is 1, 69,700 thousand hectors in India.

Agricultural development is a condition precedent for the overall development of the economy. A progressive agriculture serves as a powerful engine of economic growth. It helps in initiating and sustaining the development of other sectors of the economy by providing necessary capital, labour, raw material, wage goods and foreign exchange (Kumar, 2007).

In view of this, after independence tremendous efforts were made to boost the economy through agriculture as one of the tools for development. The Government of India adopted a positive approach and hence a well defined policy of integrated production programmes with defined targets and a proper distribution programmes was adopted along with other measures for the overall economic development of the country. Specific programmes like new agriculture technology were introduced to convert agriculture into a successful and prosperous business, to bring more land under cultivation and to raise agriculture production (Singh, 1994). In India, the adoption of new agricultural



technique was costly than that of traditional method of cultivation. In traditional method, inputs were least expensive, on the other hand, inputs in modern technology like high yielding varieties of seeds, fertilizers, farm mechanization and irrigation were very costly and Indian farmers being poor were not in a position to buy these expensive inputs. On the recommendations of food grain price committee (Jha Committee), the Government of India started the scheme of subsidies on purchase of various agriculture inputs to facilitate the farmers (Singh, 1994). Subsidies have occupied agricultural economists for a long time because they are pervasive in agriculture, even though they are often applied in ways that benefit mostly richer farmers, cause inefficiencies, lead to a heavy fiscal burden, distort trade, and have negative environmental effects. Agricultural subsidies can play an important role in early phases of agricultural development by addressing market failures and promoting new technologies (Fan, 2008).

REVIEW OF LITERATURE:

Impact of investment on agricultural growth and rural development Goswami and Saikia, 1972, Sinha and Kumar, (1996) (Kalla, 1978, Sharma, 1987). While few other researchers found that comparatively higher investment on progressive farms was made on irrigation structures and modern farm equipments while, in back ward areas the investment was mainly on livestock and traditional farm assets (Desai, 1969, Shah, 1972, Singh and patel, 1972, Garget *al.*, 1996, Bhuvaneshwari and Alagumani, 1996). Chond (2001) and Roy and Pal (2002) Since the major emphasis of the present study is to analyse the behavior of agricultural investment at macro-level, therefore, the studies that examined the behavior and determinants of agricultural investment and its impact on agricultural growth and development. Agricultural production is increases. Sirohi (1984) and Thorat (1986) and Acharya and Jogi (2004) and Singh (2005) Since the major emphasis of the present study is to analyze the behavior of agricultural production examined the behavior and determinants of agricultural production and its impact on agricultural growth and development. Subsidies are often criticized for their financial burden. Some researchers assert to the extent that these should be withdrawn in a phased manner, such a step will reduce the fiscal deficit. Few researchers found that Sant (1996) and Modi (2006) and Pachauri (2006) and Jakhar (2008). All study conducted my study will focused on the beneficiary non beneficiary farmer and size of land holding size of farming, location, climate, rainfall, soil type, land utilization pattern, operational land holdings, cropping pattern, marketing, infrastructural facilities cast wise, age wise, season wise Rabi and kharif, Education, irrigated non irrigated area etc. pratapgajendra(2011) examined in article Domestic subsidies, the agriculture subsidies can be broadly discussed under two categories one is export subsidy & another is domestic subsidy, he also focused on following issues -Subsidies pro-poor in the developed country and subsidy impact on the Indian economy.

OBJECTIVE OF THE STUDY:

- To study the impact of direct and indirect subsidy on SC/ST farmers;
- To compare and contrast the fertilizer and power subsidy between general

farmers and SC/ST farmers in levels of agricultural productivity of Karnataka;

- To analyze the overall effect of differences in the levels of input subsidy used by various categories of frames on crop pattern, cropping intensity, adoption of improved technology, input use, crop productivity and cost returns
- To validate the data and offer constructive suggestions.

METHODOLOGY:

The present study is based on primary as well as secondary data. The districts of have been divided into three regions on the basis of levels of agricultural productivity. Average productivity is estimated by aggregation of the output of ten major crops of the state for the year 2015-16. Keeping in view the differences in agro-climate conditions and to avoid the geographical contiguity of sampled districts, it is deemed fit to select Bagalkot from irrigated non irrigated area and vijapur from district. There are four village of Bagalkot, four of Bijapur each. Following random sampling, two villages from each Hobali is selected, thus twelve villages are selected from two districts. Sampled farmers have been divided into three categories on the basis of their farm size, small size category farmers are those who own land up to five acres, medium size category farmers own land between five to ten acres and large size category farmers own land above ten acres. A detailed questionnaire is prepared for collecting information about the agriculture subsidies. Standard statistical tools like, percentages have been used while carrying out tabular analysis. In addition to primary data, secondary data is used in this study. The main sources of secondary data are Karnataka State Electricity Board, Statistical Abstract of Karnataka, Economic Survey of Karnataka, Karnataka Human Development Report, Karnataka State Electricity Regulatory Commission etc.



RESEARCH METHODOLOGY:

Designing a suitable methodology and selection of analytical tools are important for a meaningful analysis of any research problem. In this section an attempt has been made to describe the methodology of the present study. It includes nature of data, primary data source of secondary data, study area, period of study, sampling size, tools of collection of data, tools of analysis and measurement of variables.

Nature and Source of Data:

The present study will be based on the primary. The primary data will be used in this study. The main sources of secondary data relating to the location, climate, rainfall, soil type, land utilization pattern, operational land holdings, sources of irrigation, area, cropping pattern, marketing, infrastructural facilities and the like were collected for the district and the taluk levels from the district collectorate, Bagalkot and Vijayapur the statistical office at Bagalkot district. State Planning Board Census report, District at a Glance, Karnataka state Agricultural department, Statistical Abstract of Karnataka, Economic Survey of Karnataka, Agriculture census, State Budget etc. Personal interview method has been adopted to collect primary data regarding the farm structure, size of holding, cropping pattern, costs and returns, subsidies enjoyed and other aspects relating to the overall objectives of the study.

Study Area:

Bagalkot and vijayapur districts are located in the northern part of Karnataka state in India. The district is one of the most important districts in Karnataka where there has been significant agricultural development particularly, the annual crops, Sugarcane and Maize. In spite of these production Jowar and Bengal Gram is main perennial in this districts. Here, the soil and climatic conditions are highly suitable and favorable for these crops cultivation. As per records, a majority of farmers are utilizing major subsidies at all levels of agricultural activities. These are the main reasons for selecting Bagalkot and vijayapur districts as the study area for the present analysis.

Period of Study:

The field investigation was carried out from September 2015 to March 2016. The reference period of the survey is 2015-16.

Sampling and Size:

Stratified multi-stage proportionate random sampling technique has been adopted for the study, taking Bagalkot and vijayapur districts. As the selecting 200 respondent, 4 taluka, in the 8 village as the primary unit of sampling and the subsidy farmer all crops cultivating farmers as the ultimate unit.

IMPORTANCE OF THE PRESENT STUDY:

Subsidies are often criticized for their financial burden. Some researchers assert to the extent that these should be withdrawn in a phased manner, such a step will reduce the fiscal deficit, improve the efficiency of resources use, funds for public investment in agriculture. On the other hand, there is a fear that agriculture production and income of farmers would decline if subsidies are curtailed. These are very important issues, which need serious investigation.

Total Agricultural Subsidies:

When direct and indirect subsidies were combined together, it was noticed that in irrigated area the amount per hectare of gross cropped area was quite higher for indirect subsidy than the direct subsidy. This was also true for dry area. In this area the average amount of indirect subsidy was Rs.589 as compared to Rs.423 in the case of direct subsidy. The total picture for all the districts combined was such that the amount of indirect subsidy per hectare was Rs.722 as compared to Rs.550 for direct subsidy. Caste wise difference was such that the subsidy for farms of other castes people was Rs.1,489 as compared to Rs.909 for farms of SC/ST farmers. The total for irrigated and dry area also confirms the fact that the subsidy amount increased with the size of farms in the case of other castes farmers. However, there was no such phenomenon in the case of farms of SC/ST.

Table: 1 Total agricultural subsidies utilised by sample farmers.

(Rs. per hectare of gross cropped area)

Farm Size	Direct			Indirect			Total		
	SC/ST	Others	ALL	SC/ST	Others	ALL	SC/ST	Others	ALL
Irrigated area									
Marginal	56	396	291	732	809	785	788	1,205	1,076
Small	63	1,349	785	667	746	725	730	2,095	1,510
Medium + Large	38	984	658	796	850	831	834	1,834	1,489
Total	42	933	637	778	832	814	820	1,765	1,451
Dry area									

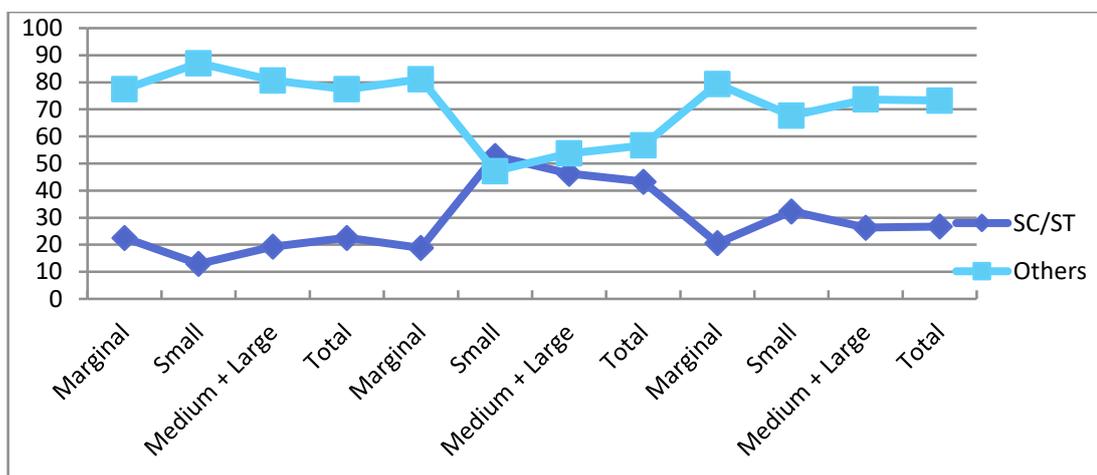


Marginal	434	841	730	442	587	547	876	1,428	1,277
Small	2,005	432	951	541	642	610	2,546	1,074	1,561
Medium + Large	262	236	249	531	652	593	793	888	842
Total	482	376	423	525	639	589	1,007	1,015	1,012

Share of SC/ST in Agricultural Subsidies:

The government is interested in extending the benefits of subsidies to the weaker sections of the society and in particular to farmers of SC/ST. It will be of interest to note as to in the total subsidy given to all of farmers where do the farmers of SC/ST stand as compared to farmers of others. It was noted that in the irrigated area the share of subsidy amount enjoyed by the farmers of other castes was 81.24 per cent as compared to 18.76 per cent by farmers of SC/ST. In the case of dry area the situation was much better. The percentage of subsidy enjoyed by farms of SC/ST was 43.32 as compared to 56.68 by farms of others. For the combined picture of irrigated and dry area the percentage share for farms of other castes was 73.28 as compared to 26.72 for farms of SC/ST. This clearly shows that farms of other castes enjoyed much higher percentage of share in the total subsidy than the farms of SC/ST. It was also noted that the difference in percentage of subsidy enjoyed by other farmers in irrigated area was very significant as compared to that in dry area.

Table: 2 Share of SC/ST farmers in utilization of direct and indirect subsidies. (Rs. per hectare)



Costs and Returns: With and Without Subsidy

In this paragraph we are studying economic benefits obtained by farmers who have enjoyed subsidies against those who have not enjoyed it. There were in all eight farmers who did not enjoy the subsidy during the year. Among the irrigated area there were five such farmers two of whom belonged to SC/ST. Three farmers belonged to other castes. In dry districts there were three farmers who did not enjoy the subsidy. Of these one belonged to SC/ST and the remaining two belonged to other. It was noted that the net return per hectare for those enjoying subsidies Rs.14, 508 and for those who did not enjoy subsidies was Rs.12,032. Thus, the net return of the farmers enjoying subsidies was 37 per cent more than those not enjoying subsidies. The net return was higher in the cases of SC/ST farmers as well as other farmers than their compatriots without enjoying subsidies. The net return was much higher for irrigated area than the dry area in both the groups with subsidy and without subsidy.

Table: 3 Gross return, cost and net return on sample farms with and without subsidy (Rs. per hectare)

Area	Gross return			Cost			Net return		
	SC/ST	Others	All	SC/ST	Others	All	SC/ST	Others	All
With subsidy									
Irrigated	25,133	29,142	27,809	9,169	11,810	10,932	15,964	17,332	16,877
Dry	16,562	19,401	18,159	6,229	7,657	7,032	10,333	11,744	11,127
Irrigated + Dry	21,021	25,525	23,833	7,759	10,268	9,325	13,262	15,257	14,508
Without subsidy									



Irrigated	16,647	18,895	18,181	4,969	6,276	5,861	11,678	12,619	12,320
Dry	14,423	16,990	16,499	4,631	5,983	5,724	9,792	11,007	10,775
Irrigated + Dry	16,377	18,488	17,868	4,928	6,213	5,836	11,449	12,275	12,032

Distribution of Sample Farmers by Levels of Subsidy Use:

It is observed that of the 200 selected farmers 65.50 per cent are classified as (LSU) or low subsidy users. Another 25.00 per cent are those who are (MSU) or medium subsidy users and the remaining 9.50 per cent are categorized as (HSU) or high subsidy users. Among the SC/ST farmers 70.27 per cent are LSU, 17.57 per cent MSU and 12.16 per cent HSU. Among the other castes farmers, the percentage of less subsidy users was bit smaller than the SC/ST farmers. On the other hand the percentage of other castes farmers in the MSU was quite higher than the SC/ST farmers. It is thus evident that among other castes farmers the percentage of LSU was less than SC/ST farmers and MSU was higher than the SC/ST farmers. However, the percentage of SC/ST farmers in HSU was higher than the other castes farmers. It was also observed that the percentage of LSU in dry area was higher than the irrigated districts. The percentage was lower in the case of MSU but higher in the HSU. Thus, we can conclude that the dry districts farmers have higher percentage of farmers in the LSU group and lower in MSU group.

Table: 4 Distributions of Sample Farmers by Levels of Subsidy
(Rs. per hectare)

Subsidy level	Irrigated area			Dry area			Total		
	SC/ST	Others	ALL	SC/ST	Others	ALL	SC/ST	Others	ALL
LSU (< Rs.1000/hect.)	72.97	52.38	60.00	67.57	73.01	71.00	70.27	62.70	65.50
MSU (1000=2000/hect.)	21.62	39.68	33.00	13.51	19.05	17.00	17.57	29.36	25.00
HSU (> Rs.2000/hectare)	5.41	7.94	7.00	18.92	7.94	12.00	12.16	7.94	9.50
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Costs and Returns by Level of Subsidy:

In the earlier chapter we have studied the gross return, cost and net return per hectare by size of farms. Here, we have studied the same by level of subsidy. It was observed that in the irrigated districts the average net return was Rs.16,741 per hectare. It was highest in the case of MSU (Rs.21,853) and in HSU Rs.18,503. Thus the difference between the two was of about Rs. 3,000. In the case of dry districts the average net return was Rs.11,124 per hectare. It was highest (Rs.22,233) in the HSU followed by MSU (Rs.12,324). Thus the difference between the HSU and MSU was very significant (Rs.10,000). In both irrigated and dry districts the net returns were higher for other castes farmers than the SC/ST castes farmers. The results of combination of irrigated and dry districts showed that the average net return was Rs.14,452. It was highest in MSU (Rs.19,406) followed closely by HSU (Rs.19,264). However, the net returns were higher on other farms than the SC/ST farms in the combination of district also.

Table: 5. Gross return, costs and net return by level of subsidy (Rs. per hectare)

Subsidy level	Irrigated area								
	Gross return			Costs			Net return		
	SC/ST	Others	ALL	SC/ST	Others	ALL	SC/ST	Others	ALL
LSU	22,536	24,361	23,506	9,021	9,825	9,448	13,515	14,536	14,058
MSU	34,258	34,974	34,818	13,266	12,882	12,965	20,992	22,092	21,853
HSU	33,291	30,277	30,572	13,060	11,961	12,069	20,231	18,316	18,503
Total	90,085	89,612	88,896	35,347	34,668	34,482	54,738	54,944	54,414



Subsidy level	Dry area								
	Gross return			Costs			Net return		
	SC/ST	Others	ALL	SC/ST	Others	ALL	SC/ST	Others	ALL
LSU	14,589	16,485	15,635	4,903	6,521	5,796	9,686	9,964	9,839
MSU	27,401	23,421	24,205	13,595	11,365	11,881	13,806	12,056	12,324
HSU	25,801	47,194	34,834	12,385	12,897	12,601	13,416	34,297	22,233
Total	67,791	87,10	87,034	30,883	30,783	30,278	36,908	56,317	44,396

FINDINGS:

- When direct and indirect subsidies were combined together, it was noticed that in irrigated districts the amount per hectare of gross cropped area was quite higher for indirect subsidy than the direct subsidy. This was also true for dry districts. The subsidy amount increased with the size of farms in the case of other castes farmers. However, there was no such phenomenon in the case of farms of SC/ST. The amount of subsidy on other castes was more than double that of farms of SC/ST.
- The net return of the farmers enjoying subsidies was 37 per cent more than those not enjoying subsidies. The net return was higher in the cases of SC/ST farmers as well as other castes farmers than their compatriots without enjoying subsidies. The net return was much higher for irrigated districts than the dry districts in both the groups with subsidy and without subsidy. This shows that the subsidy has an important role in increasing the net return of the farmers for all the castes as well as irrigated and dry districts
- In the irrigated districts the average cost of canal irrigation per hectare came to Rs.61. It was highest in the case of MSU followed by LSU. Among different castes the cost incurred by SC/ST farmers was more than double that of other castes farmers. Paddy was the most irrigated crop and shared 79.97 per cent of the total cost incurred on different crops.
- Agricultural subsidy is viewed as an excellent mechanism with the Indian Economy. government's initiative is successful in benefiting the farmer community. The agricultural Input Subsidy is existing for a very long time and this has been revived to be able to change with the demands of the times.
- The Agricultural Subsidy has been able to influence the farmers to use it to optimum levels. Complexity of the Agricultural Subsidy to be in consonance with the quantum of land holding is conceded by the respondents in Bagalkot and Vijayapur. Allocation of the Agricultural Input Subsidy is questionable.
- The Agricultural direct and indirect Subsidy which has to be useful to the needy small and marginal farmers is failing in the primary objectives of ensuring equity among the farmers.
- The Agricultural Input Subsidy exhibits a huge gap where it fails to fulfill the objectives of the Policy.
- The existing Agricultural Subsidy Policy has many critical gaps. It is evident that the farmers strongly contend that the Agricultural Input Subsidy is to be structured and customized through the Need based Subsidy by scrapping the present Agricultural Subsidy distribution.

POLICY IMPLICATIONS & SUGGESTIONS:

- Subsidies in agriculture are meant to help the small and marginal farmers and weaker sections of the society like the Scheduled Castes and Scheduled Tribes farmers. For these classes of farmers the use of improved inputs and resources such as irrigation and power become burdensome and out of their reach. Due to paucity of financial backing they are deprived of improved and costly inputs. It is for this reason that government subsidises inputs like seed, fertilizers, irrigation and power. This gives them the opportunity to use the modern inputs to be in line with the other classes of better off farmers.
- This basically needs the knowledge on the part of the weaker sections of the society, they will to use the inputs and also zeal among the field workers to help the farmers of weaker sections to have an excess to knowledge of subsidies, supply of inputs and know how to use the inputs. On the basis of the available field data it was observed that the work done so far on all these aspects has not been satisfactory. The farmers are poor, devoid of knowledge of subsidies and the overall disinterest among the officials to help them through financial institutions is evident. It is therefore, suggested that the poor farmers should be educated with regard to knowledge about recent advances in agriculture, the various subsidies in operation for different purposes and necessary funding that could be provided to them.
- The use of indirect subsidies on the farms of small, marginal and SC/ST farmers was far less than the other castes farmers and farmers having larger size of holdings. It is a well known fact that purchase and use of improved of HYV seed was more common on larger farm sizes. This is because of the fact that the improved



and HYV seed also need higher doses of fertilizers and irrigation. Resources do not allow the farmers to use these inputs of their own. They need help of the institutional credit on easier terms. Then only they will be able to use the inputs and avail the subsidies.

- Timely supply of inputs is of crucial importance not only for small, marginal and SC/ST farmers but for the farmers at large. Irrigation is of crucial importance for the adoption of modern recommended practices of inputs. Steps should, therefore, be immediately taken to increase the irrigation potential of the small and marginal farms and until they are provided with irrigation facilities they should be brought in the gamut of schemes such as watershed development for rain fed areas. Here also subsidies play an important role in the adoption of watershed development programmes.
- Tremendous progress needs to be made in the crop groups of pulses, oilseeds and fibers so that their productivity is increased and the only way to do this is to implement rigorously the production programmes of these crop groups. These, of course, will need direct subsidy schemes with quite a higher allotment of funds.
- The field survey shows that low subsidy users (less than Rs. 1,000) are small and marginal farmers and belonging to SC/ST classes go in for cultivation of food grain crops to satisfy the household requirements and also because of the small size of holdings do not offer them much scope for diversification of crops specially to commercial crops. If the policy makers decide to reduce the subsidy level on these farms these classes will face the danger of providing food security to them.

CONCLUSION:

It can be concluded that the Agricultural Input Subsidy is an essential factor in the Indian agricultural scenario. The Agricultural Input Subsidy is instrumental in increasing the exports and reducing the imports. The farmers are getting benefitted through the scheme with huge gaps yet to be fulfilled. There is a universal and uniform way of distributing the subsidy. The large farmers are treated on par with the small and marginal farmers causing regression in the sectoral development. The Agricultural Input Subsidy has always enjoyed an important role of being backbone of the Agricultural sector in India and has elevated the Indian Economy. An ideal subsidy distribution based on the economic levels, size of the holdings, and fertility of the soil can bring the lamenting small and marginal farmers belonging to the neglected section of the society to the main stream. The individual social responsibility of the large farmers may result in insuring thinning the small farmers so that the issues related to the small and marginal farmers belonging to SC/ST get a proper focus. It is the economically weaker category farmers who suffer and get worst affected in the instances of shortage of the agricultural subsidies. A different Slab rate which is in fact, a meticulous way to work out the subsidy distribution is missing and the present policy is largely benefiting the large farmers. The funds are also lacking with the poor farmers making them incapacitated to use power subsidy which calls for the Pump sets and other infrastructure. Power subsidy can be worthy to the small and marginal farmers only if it is backed by the Parallel incentives.

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“Impact of Solar Home Systems on social development of rural areas in Chikmagalur District”

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Abstract: The primary objective for deploying renewable energy in India is to advance economic development, improve energy security, improve access to energy, and mitigate climate change. Sustainable development is possible by use of sustainable energy and by ensuring access to affordable, reliable, sustainable, and modern energy for citizens. This study was carried out to find the impacts of solar home systems (SHSs) application at selected villages in Chikmagalurdistrict, Karnataka. A questionnaire-based survey method was used to collect primary data, present study is analytical in nature and 75 respondents were selected randomly to assess the impact of SHSs. The research reveals that solar electrification provided direct and indirect benefits to the users of the system, with many implications of a permanent nature. Reduction in the energy expenditure was the main impact of SHSs. It resulted in less pollution, higher quality light and more hours of light in the evening, as well as less work for cleaning kerosene lamps. Very few income generation activities were created after acquiring SHSs in the studied villages. But the people who were engaged with business using traditional fuel, switched to solar light that added a little bit more income due to extended working hours in the evening. Women and children were found to benefit from the quality of light for household work and studying in the evening. Users became accustomed to the better quality of light and could not perceive returning back to alternatives.

Key Words: India, Sustainable, Renewable energy, solar home systems, Impacts, Livelihoods

INTRODUCTION:

India ranks 3rd in renewable energy country attractive index in 2021 and 3rd largest energy consuming country in the world. The country has set an ambitious target to achieve a capacity of 175 GW worth of renewable energy by the end of 2022, which expands to 500 GW by 2030. This is the world's largest expansion plan in renewable energy. India was the second largest market in Asia for new solar PV capacity and third globally (13 GW of additions in 2021). It ranked fourth for total installations (60.4 GW), overtaking Germany (59.2) for the first time. India's installed renewable energy capacity has increased 396% in the last 8.5 years and stands at more than 159.95Giga watts (including large Hydro), which is about 40% of the country's total capacity (as on 31st March 2022). The installed solar capacity has increased by 19.3 times in the last 8 years, and stands at 56.6 GW as of 1st June 2022.

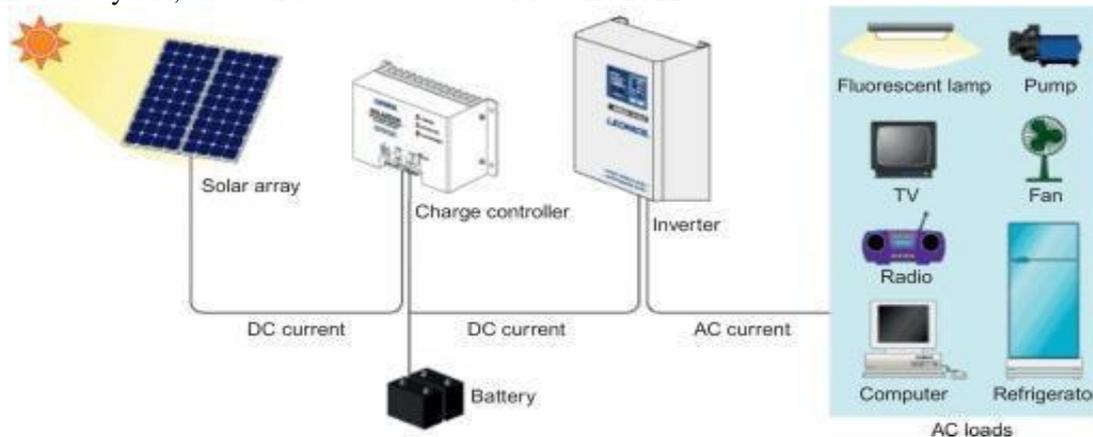


Figure 1. Photovoltaic Solar Home Systems.



Solar home systems (SHSs) provide alternative electricity from sunlight to light rural households where there is little hope for grid electricity supply (IDCOL, 2010). Energy inputs such as electricity and fuels are essential to generate jobs, industrial activities, transportation, commerce, micro-enterprises and agriculture outputs” and resolving the energy challenge is recognized as critical for achieving the UN Millennium Development Goals (UN-Energy, 2005). Karnataka is rich in solar resources and solar energy in fact complements the conventional sources of energy in a large way. The State of Karnataka is blessed with about 240 to 300 sunny days with good solar radiation of 5.4 to 6.4kWh/m²/day. Karnataka was the first state to commission 3MW capacity utility scale solar project, in India, on 27.12 2009 at Yelasandra of Kolar district. Global Solar Radiation in Karnataka The region of the earth between the latitude of 40° N and 40° S is generally known as the solar belt and this region is supposed to be with an abundant amount of solar radiation. Karnataka being located between 11° 40’ and 18° 27’ north latitude and the geographic position favours the harvesting and development of solar energy. Karnataka receives global solar radiation in the range of

5.1-6.4kWh/sq Mt/day during summer
3.5-5.3 kWh/sq Mt/day during monsoon
3.8-5.9 kWh/sq Mt/day during winter

The potential Solar districts in Karnataka - Kolar, Chitradurga, Davanageri, Ballary, Koppal, Haveri, Gadag, Vijayapura, Bagalkot, Kalaburagi, Raichur, Tumakuru, Hassan, Ramanagar & Belagavi. In Karnataka the estimated Solar potential is 25GW. However, considering factors like availability of waste lands, evacuation infrastructure etc., and the moderated potential may be somewhat less. Anyway Karnataka has the potential to evolve as a major Solar Generation hub in India due to a host of factors. Apart from this, Residential, Industrial and Commercial Consumers are evincing keen interest in installing Solar Rooftop plants and this will also add solar power to the Grid.

GOVERNMENT INITIATIVES FOR SOLAR ENERGY PROMOTION:

Some initiatives by Government of India to boost India’s renewable energy sector are as follows:

- In the Union Budget 2022-23, the allocation for the Solar Energy Corporation of India (SECI), which is currently responsible for the development of the entire renewable energy sector, stood at Rs. 1,000 crores (US\$ 132 million).
- In the Budget, the government allocated Rs. 19,500 crore (US\$ 2.57 billion) for a PLI scheme to boost manufacturing of high-efficiency solar modules.
- In November 2021, at the COP-26 Summit in Glasgow, Prime Minister Mr. Narendra Modi made a promise to increase India’s renewable energy generation capacity to 500 GW, and meet 50% of India’s energy needs through renewable means by the year 2030.
- In October 2021, the Ministry of Power announced a new set of rules aimed at reducing financial stress for stakeholders and safeguarding timely cost recovery in electricity generation.
- In August 2021, the Indian government proposed new rules for the purchase and consumption of green energy. The latest rules are a part of government measures to encourage large-scale energy consumers, including industries, to leverage renewable energy sources for regular operations.
- In July 2021, to encourage rooftop solar (RTS) throughout the country, notably in rural regions, the Ministry of New and Renewable Energy plans to undertake Rooftop Solar Programme Phase II, which aims to install RTS capacity of 4,000 MW in the residential sector by 2022 with a provision of subsidy.
- In June 2021, Indian Renewable Energy Development Agency Ltd. (IREDA) invited bids from solar module manufacturers for setting up solar manufacturing units under the central government’s Rs. 4,500 crore (US\$ 616.76 million) Production Linked Incentive (PLI) scheme.
- In April 2021, the Central Electricity Authority (CEA) and CEEW’s Centre for Energy Finance (CEEW-CEF) jointly launched the India Renewable Dashboard that provides detailed operational information on renewable energy (RE) projects in India.

OBJECTIVES OF THE STUDY:

- To understand the usage level of solar energy in India and Karnataka.
- To assess the impact of SHSs on rural social development in the study area.



METHODOLOGY AND STUDY AREA:

A cross-sectional survey was the main data collection method. The survey was conducted in three rural villages (Lingadahalli, M C Halli and Kudlur) located in Tarikeretaluq of Chikmaglur district, Karnataka. Lingadahalli village is situated approximately 44 km north-west from the Chikmaglur district center. M C halli is located about 45 km east of the district center and Kudlur is 56 km from Chikmaglur city. A total of 65 households and 10 micro-enterprises operated by SHSs were surveyed and simple random sampling method has been used for the study. The sample covered all applications of the solar systems. Three focus group discussions were also held in the studied villages during the survey. The questionnaire covered a large number of variables, including indicators on socio-economic aspects, income generation, education, technology functionality and environmental impacts. To address the objective of this study, an interrelated approach was used as shown in Fig. 1 (adopted from Mala et al., 2009).

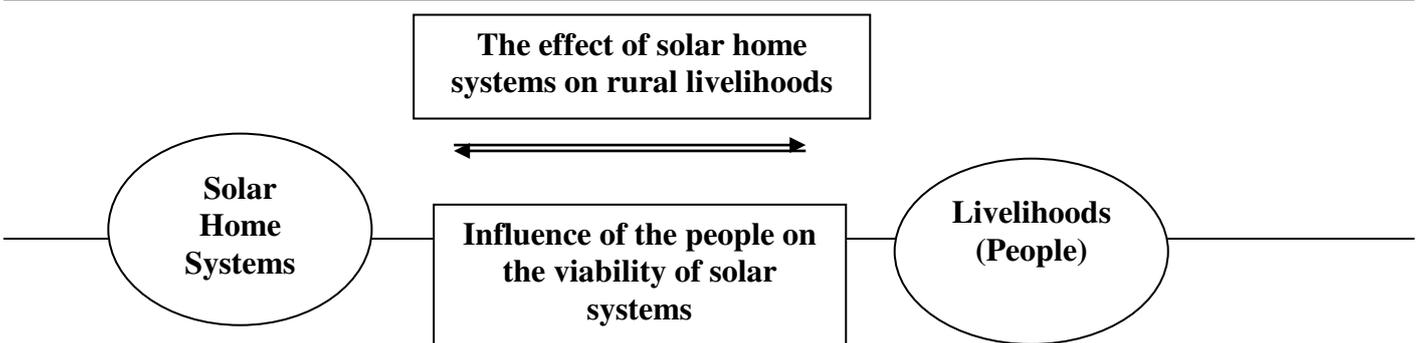


Figure 2. SHSs and the people: an inter-related approach.

The purpose of the questionnaire was to gather ex-post information on changes in the livelihoods of beneficiary households through questions targeted at the time before and after the use of SHSs. The questions covered all aspects of the life of local people related to the implementation of SHSs in the selected villages. Specifically, the survey questions and the overall research design were targeted at understanding how the various components (solar light, smokeless environment, and replacement of car batteries for operating TV) have changed the life and living conditions of the people during the SHSs useful period; how local people have coped with the changes; and how they perceive them.

SOCIO-ECONOMIC DATA AND HOUSEHOLD CHARACTERISTICS:

The level of income is correlated with the educational level and occupation of the respondents and the heads of the households. It was found that about 67% of the respondents were educated beyond primary education and 21% have completed secondary education whereas 12% completed PUC. About 33% of the respondents were found to be engaged in some kind of business activities and the same percentage of the respondents were involved in agriculture. Higher levels of education and business involvement were also found to correlate with better housing structures. Visual inspection of the surveyed houses revealed that the 90% of the houses were constructed with mud/earth and roofs were made of tin material. The remaining houses had brick walls and concrete roofs.

Table 1 Reasons for choosing SHS as an electrical energy source.

Reasons	s Why did you choose SHS as your source of electricity? Number of respondents (n) Percent of respondents (%)	
Available energy source	63	84%
Comfortable	57	76%
No pollution	69	92%
Many advantages	71	94%
Less cost	58	77%
Only way to get electricity	47	62%
Easy to operate	39	52%
To enjoy TV	67	89%

Source: Primary data collected by the researcher



Table 3 Opinions regarding impact of SHSs (number and percent of respondents).

Impacts	Disagree	Neutral	Agree	Totally agree
No pollution	-	-	73 (97%)	2 (2.6%)
Children can study more hours	-	4 (5.33%)	71 (94%)	-
Improvement in the health of women	-	7 (9.33%)	68 (90%)	-
Comfortable life	-	6 (8%)	69 (92%)	-
Better entertainment	10 (13.3%)	-	65 (86%)	-
Education improved due to increased use of medias	9 (12%)	-	66 (88%)	-
Able to work longer at night	-	-	75 (100%)	-
Increased status in the community	-	-	63 (84%)	12 (16%)
Secured in the night	-	-	67 (89%)	8 (10.6%)
Economically beneficial	-	-	71 (94.6%)	4 (5.3%)

Source: Primary data collected by the researcher

FINDINGS:

We can observe from the above table majority of the respondents satisfied with solar home systems, and researcher get positive response by the respondents. Solar electrification was found to provide direct and indirect benefits to the users of the systems, with many implications of a permanent nature. The burning of kerosene in traditional lamps can generate indoor heat and pollution that affect the health of the users and the environment. Reduction of electricity expenditure and meet electricity demand were the main impact of the use of SHSs. Thus SHSs were found to lead to less pollution, less hassle of kerosene lamps and better light. Furthermore, SHSs allowed for charging a car battery (used to operate TV) more quickly and easily than earlier when batteries were charged from grid electricity supply which is available at a distance of about 4 to 6 km. Among the respondents, 5% were still using kerosene lamps for lighting. The remaining 95% were only relying on solar light for lighting. About 94% of respondents were economically benefited by using SHSs and 100% respondents opined that, they are able to work longer at night. To summarize the results based on the survey four indicators: suitability, affordability, technological know-how capability and livelihood diversification are discussed to assess the impacts of SHSs for rural development.

Different issues from focus group discussions:

Results from focus group discussions (FGD) support the findings from the questionnaire survey. Discussions confirmed that electrification of households and micro enterprises at study areas changed the overall community life of the villages. Activities in the rural villages continued for longer hours. Women and children benefited from quality light for household work and studying (75% and 68%) in the evening. Solar electrification was generally much preferred than other available energies. Users were accustomed to the better quality of light and could not perceive returning back to other alternatives. Solar electrification of individual houses also added an overall comfort and satisfaction of the consumers. Entertainment and communication using TV and mobile phone became easier and affordable finally home based workers were more benefited from SHS. Solar home systems removed the inconvenience of carrying the batteries to further away villages for charging from the grid. Few additional income generating activities were added but the existing activities were extended and further developed. Users were familiar with conventional grid-electricity services, and by using grid-electricity many works including commercial activities could be done during the day or night time. Respondents were also aware about the limitation of using SHSs during the rainy season and foggy weather and also the limitations to operating fans, color TVs and refrigerators. Consumers highlighted the high initial cost. A detailed analysis of the cost effectiveness and viability of SHSs is discussed in Mondal (2010a). To sum up, people were well informed about the limitations of SHSs services.

**SUGGESTIONS:**

- In order to make the most of their potential, they should be provided with sufficient training and a good support service that can ensure their continued functionality.
- The central and state Governments should arrange proper programmes to create awareness about the solar energy system in the rural areas at reasonable cost to the people who are living in the rural areas for using the solar energy system every day.
- There is need to public awareness and community participation provided much coverage to such incentives to adopt the system.

CONCLUSION:

Solar home systems are often portrayed as a reliable technology which can satisfy basic energy needs (light), are easy to operate and maintain, and allow for the development of small-scale income generating activities. The results from field study of the impact of SHSs at three villages in Chikmagalur district of Karnataka, presented in this paper indicate a much more nuanced picture of the value and benefits of SHSs. Specifically, SHSs were found to provide tangible benefits in terms of better quality of light which led to improvements in children's education, reduced indoor pollution, improved social status and enhanced living standards. At the same time, however, it should be noted that the main need met by SHSs was lighting. Affordability in many cases was achieved at the expense of diverting income from other needs. At the time of the survey, the systems had a very modest impact on income generating activities for ordinary villagers. To sum up, the study cautions against unreasonable expectations regarding the potential and sufficiency of solar energy systems as universal strategies for improving livelihoods by increasing income generation activities. SHSs provide tangible social benefits but should not be used as a substitute to comprehensive poverty-reduction efforts.

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An Overview of Seeds Production in India

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Abstract: *The agricultural sector has been considered the backbone of the Indian economy and it provides subsistence to more than 52 percent population of the country. Seed is the foremost important commodity for successful vegetable production. Indian vegetable seed production is going enormously annually. The policies of Govt of India since independence liberalized and support the seed trade in India. private seed firms with a multinational base are actively involved in vegetable seed production in India, making the public sector much lagging behind. Increasing areas under vegetable cultivation, varied agro-climatic conditions, availability of Skill, and cheap human labor are creating maximum scope for the development of the vegetable seed industry in India. The vegetable seed industry has an important and positive influence on the Indian economy in terms of income and employment generation, and earning foreign exchange in the international market. There are a few constraints like the high cost of seed production, and technical problems breaking into the vegetable seed industry in India.*

Key Words: *Seed, Production, seed industry, India.*

INTRODUCTION:

The agricultural sector has been considered the backbone of the Indian economy and it provides subsistence to more than 52 percent population of the country. Around 43 percent of India's total geographical area is used for agriculture and its related activities. The agriculture sector accounts for about 12.3 percent share of the total exports of the country. Being the largest agricultural dominating country, this sector accounted for 19.9 percent of the gross value added (GVA) of India. Although the share of agriculture is continuously declining, it plays a foremost role in the overall socio-economic development of the nation. Agriculture is the main source of livelihood. In recent years, remarkable progress has been witnessed in the production of food grain which achieved a record level of 275.11 million tonnes in 2016-17 (Economic Survey of India, 2017-18). Seed Production plays an important role in all inputs for sustainable crop production. It is estimated that the quality of seed accounts for 20-25% of productivity. The importance of quality seed has been realized by mankind for long days. The need for a good seed for the profitability of the human race is mentioned in the Rigveda of ancient Times. It is mentioned in the primeval manuscript as "Subeejam Sukshetre Jayate Sampadyate" which means "A good seed in a good field will win and prosper". Saving some portion of produce as seed for the next cropping season or year in various structures is a very common and age-old practice of the Indian farming community. There have been few private seed industries dealing with the production of vegetable seeds, the production of crops, especially for seeds in a conducted fashion to maintain quality in terms of genetic and physical purity is realized during the green revolution period with the establishment of the National Seeds Corporation (NSC) in 1963.

It is set up for the healthy development of the seed industry in India. The principal responsibilities of NSC are establishing an adequate system of quality control inspection for scientific processing, storage, and marketing of seeds. It also takes the responsibility of multiplication of seeds of pre-released varieties and production of seed of varieties. Few milestone events in seed policy by Govt. of India are described below.



Seed policy's by Govt of India

SL. NO	Action plans	Year
01	The Seeds Act.	1963
02	National Seeds Project.	-
03	Protection of Plant Varieties and Farmers Rights Act.	2001
04	The Seeds Bill.	2004
05	Enactment of the Seeds Act.	1966
06	Seed Review Team-SRT.	1968
07	National Commission on Agriculture's Seed Group.	1972
08	World Bank aided National Seeds Programme.	1975-85
09	Technology Mission on Oilseeds & Pulses renamed as 'The Integrated Scheme of Oilseeds, Pulses, Oil Palm and Maize' Seed Transport Subsidy Scheme (1987).	1986
10	New Policy on Seed Development.	1988
11	Seed Bank Scheme.	2000
12	PPV&FR Act.	2001
13	National Seeds Policy.	2002
14	The Seeds Bill.	2004
15	Formulation of National Seed Plan.	2005
16	National Food Security Mission.	2007
17	Rastriya Krishi Vikas Yojana.	2007
18	National Biotechnology Development Strategy.	2007
19	National Biotechnology Regulatory Authority of India Bill.	2009

Source: Report on SEED INDUSTRY SCENARIO 18-21 September 2019

Increased Demand for Vegetable Seeds:

According to the FAO (Food and Agriculture Organization), vegetable production in the country increased from 131.6 million tons in 2017 to 132 million tons in 2019 as a result of increased Indian domestic demand for vegetables in line with the consumption of various vegetable crops such as potato, onion, cabbage, tomato, okra, and chili, etc. increased from 2016-2020. Moreover, the area cultivated under vegetables of first importance reduced from 8.8 million hectares in 2017 to 8.4 million hectares in 2019. However, the vegetable yield showed an important increase from 149,217 kg/ha in 2017 to 155,623 kg/ha in 2019. According to the ICAR (Indian Council of



Agricultural Research, increasing awareness of the consumption of vegetables to meet various dietary requirements and nutritional needs has raised the demand for vegetables, and also led to an increase in the area of vegetable production. On the supply side, farmers are growing a wide range of vegetables since vegetables are short-term crops that have multiple cultivations, resulting in a better income flow for farmers. Maximum vegetable-producing states in India are Bengal, Uttar Pradesh, Madhya Pradesh, Bihar, Gujarat, Chhattisgarh, Maharashtra, and Haryana. India is the largest producer of potato, onion, tomato, okra, eggplant, cabbage, and cauliflower, among vegetables, and ranks second in the worldwide production of potatoes, onions, cauliflowers, brinjal, cabbages, etc. Substantial increases in productivity can thus be achieved even dimension with land and water resources enabling the use of better and quality seeds provide with better quality under good crop agronomy in the country. With purpose cultivation using hybrids, India's average yields under open field conditions have been steadily increasing. The need for producing more from the decreasing per capita arable land to get higher returns can be possible with the use of High Yielding Varieties (HYVs) and hybrid varieties.

OBJECTIVES OF THE STUDY:

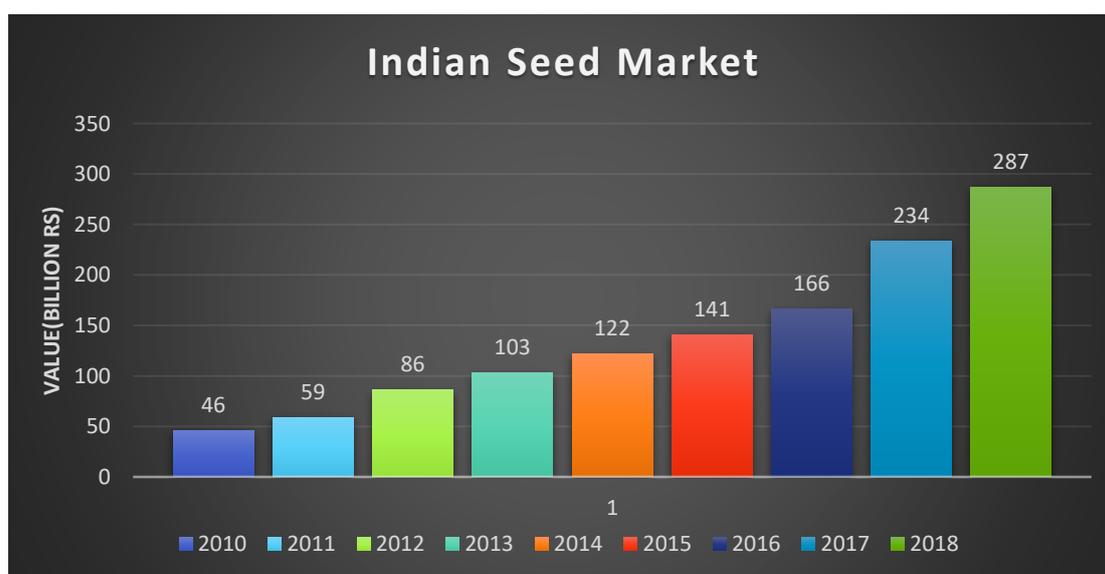
- To understand the concept of seed production in India.
- To analyze the economic impact of seed production on the Indian economy.

METHODOLOGY:

Basically, the study is analytical in nature, and it is based on secondary data. The secondary data has been collected from various journals, research articles, periodicals, newspapers, and through agriculture department websites.

INDIAN SEED INDUSTRY:

The Indian seeds market was valued at USD 59.71 billion in 2018, exhibiting a CAGR of 7% during 2011 - 2018. It is next days to register USD 90.37 billion in 2024 witnessing a CAGR of 7.9% during the forecast period 2019-2024. The increasing demand for grains, oils, and vegetables is an important driver for the seeds market. Grains represent the biggest portion of daily calorie intake in developing countries of the middle east & Africa, Asia/Oceania, and CIS, and therefore, the demand for grains will be one of the most critical needs for the seed market. The shift in farming practices worldwide has necessitated the adoption of commercially produced enhanced seed varieties by the farmers as opposed to using seeds from the last harvest. High yield seeds, improved quality crops, control of crop damage, disease control, etc. motivated farmers in investing in commercial seeds. The massive increase in the demand for biofuel, buoyed by the large subsidies provided in many western countries, has increased the production of global biofuels by almost 150% between 2004 and 2010 from 42 billion liters to 104 billion liters respectively.



Source: Report on SEED INDUSTRY SCENARIO 18-21 September 2019



As per an FAO report, the biofuel boom had a major impact on the evolution of world food demand for cereals and vegetable oils. moreover, it states that without biofuel, the growth rate of world cereal consumption is equal to 1.3%, as compared to 1.8% of biofuel, and this is an important factor behind the expansion of the global seed market. besides these, acceptance of area under genetically improved crops, increasing demand for animal feed, rapid adoption of biotech crops, and decreasing per capita farmland are contributing to the growth of the seed market. On the other hand, factors like increased concerns over seeds, years involved in the development of new quality and long seed approval timelines, and government regulation have been holding the sector back. The North American seeds market was valued at USD 20.91 billion in 2018, serving the farmers mainly in grains, cereals, fruits, vegetables, and oil and forage crops. The market is expected to reach USD 30.9 billion by 2024 and is estimated to register a CAGR of 6.46%, during the forecast period. North America is the largest commercial seeds market, accounting for more than 35% of the market share of the more than 540 private seed companies that operate in the country, 80 have their own R&D programs. The share of the public sector in seed production in the country reduced from 42.72 percent in 2017-18 to 35.54 percent in 2020-21, while the share of the private sector grew from 57.28 percent to 64.46 percent during the same period, highlighting the rising role of private companies in India's seed sector. The Standing Committee on Agriculture's 25th report on demands for grants (2021-22) presented to the Lok Sabha in march present year quoted the department of agriculture, cooperation and Farmers welfare stating that about 540 private seed companies, including those of Indian origin companies and multinational companies, operate in the country. of this, about 80 companies have their own research and development programs. the rest produce and market the seed of public sector varieties and are not involved in breeder seed production. The report adds that a large number of private seed companies are involved in the production of foundation and certified/ truthfully labelled seeds. The primary data by the Indian Council of Agriculture Research (ICAR) shows that 53.25 percent share of the public companies and 46.75 percent of the private sector is in the total formal system of the seed supply. Most of the varieties multiplied and marketed by the private sector companies are from the public sector. In the case of wheat, rice, maize, tomato, okra, and mustard, more than 300 companies have licensed the varieties developed by ICAR and the quality seed of newly released varieties is being made available to farmers.

RESEARCH AND POTENTIAL:

- The National Agricultural Research System under the aegis of ICAR has developed more than 5,700 varieties of different field and horticultural crops since 1969. From 2014 to January 2021, a total of 1,575 varieties of 70 field crops have been developed, which include 770 varieties of cereals, 235 oilseeds, 236 pulses, 170 fiber crops, 104 forage crops, 52 sugarcane, and 8 other crops. In addition, 288 varieties of horticultural crops have also been released and notified.
- The Federation of the Seed Industry of India (FSII) claims that the Indian seed industry is worth Rs 18,000 crore and is constantly growing. Looking at the country's well-developed seed industry and expertise in the sector, it has the potential to become a global hub, according to the FSII. Currently, seed export by India is less than Rs 1,000 crore per annum and the annual global seed trade is \$14 billion (Rs 10,460 crore). Therefore, India has the potential to capture a 10 percent share, which is \$1.4 billion or Rs 747 crore by 2028, as per the FSII data.

FINDINGS:

- **Income generation:**
Seed production of vegetables is a highly profitable business. Even from small land holdings very large income can be generated. on average, the cost of seed production per acre of both OPV and hybrids ranges from 15000 to 30000 Rs depending upon the crop. In general, 40-50 kg of OPV seed of tomato and brinjal can be produced on one-acre land. Ten gram OPV seed of tomato and brinjal cost around 60-70 INR in the market.
- **Foreign Exchange Earning:**
There is a vast demand for vegetable seeds in foreign countries. India is the ninth largest exporter of fruit and vegetable seeds in the world thereby earning good foreign exchange reserves. The major seed importing countries from India are Pakistan, Bangladesh, Saudi Arabia, Netherland, and the Korean Republic.

CONCLUSION:

It can be concluded that the vegetable seed business will ever have huge scope for success and will play an important role in the economy in countries like India where the occupation of the majority of the people is agriculture. There is a greater need to make available quality seeds to the farmers in time and in sufficient quantity at fever prices.



Seed laws are to be applied strictly to ensure the supply of quality seeds and to protect the farmers from spurious seeds. The Indian Seed Improvement Programme is backed up by a strong crop improvement program in both the public and private sectors.

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Effectiveness of revenue and expenditure of Gram Panchayats on rural development in rural Karnataka

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Abstract: Most developing countries are predominantly rural in nature and with globalization; the rural-urban gap is increasing in a number of countries (Vos, Taylor and Barros, 2002). In Indian context this gap has been extended. Therefore, respective government will provide the infrastructure facility to rural people for improve the quality of life to rural people. Because of Village has always remained the most significant and basic unit of our social and economic life. That's why Gandhi advocated a self-sufficient village economy and self-reliant village community' and emphasized the full utilization of local resources for development purpose. Hence, Government finance is significant in development of rural areas. In this manner, central and state government has provided the financial support to rural areas; because basic needs of rural areas still remain unmet. Because of Gram Panchayats have more responsibilities and less financial sources (Rajaraman, Bohra and Renganathan, 1996; Abdul, 2000). Therefore, requiring them to mobilize "own" revenues is important both for reasons of efficiency and accountability. It is evident from the review of the literature that most of the studies are focusing on evolution, growth and the significance of Panchayats raj institutions in a broader framework. Some other research only focuses on Gram Panchayats fund allocation and utilizations. Therefore, the study attempts to review the existing structure of different sources of finance for Gram Panchayats (GPs) in Dharwad and Vijayapur districts of Karnataka and analyze the effectiveness of revenue mobilization. It also looks into the problems associated with revenue mobilization and suggests how to improve its effectiveness in four sample GPs namely Ugginakere, Begur, Golasangi, and Byakod in were selected districts in Karnataka. The study based on Primary and secondary data. Collected of Primary data from selected Gram Panchayats and collected of secondary data from RDPR.kar.nic.in. Use the CV, Annual Growth rate, ANOVA and Regression for analyzing the collected data. The study has limited period from 2005-06 to 2015-16. The study found that the Gram Panchayats which has received the highest revenue from the governments is collecting of revenue has less. Better performance of Gram Panchayats has utilization of revenue and expenditure quite better compared to poor performance of Gram Panchayats. Similarly, better GPs revenue mobilization has higher than poor performance GPs. Consequently, better Gram Panchayats has improved in rural development suggested the need for strengthening the potentiality of GPs in generating own revenue. Arranging collection campaign program including online remittance, increasing the nontax revenue and revenue through 'other items', innovating agency functions coupled with independent activities etc are the methods suggested for improving the effectiveness of Revenue mobilization by selected Gram Panchayats.

Key Words: Finance, Gram Panchayats, OSR, Rural Development.

INTRODUCTION:

Gandhi advocated that India's development lies in villages. India's independence must begin from the bottom level, thus making every village a republic or Panchayat. He remarked that real democracy cannot be worked by twenty men sitting at the centre. It has to be worked from below by the people of each village. These dreams lead to the inclusion of Article 40 in the Directive Principles of the State Policy of the Constitution of India. Five decades of independence, before the year 1993, India government took a revolutionary step by establish PRIs a neighbourhood of the Constitution. In recent years, process of decentralised planning is considered as a panacea for solving various irritable issues faced by society particularly at rural areas. Successive of the PRIs and the financial resource devaluation to various layers of PRIs is a significant issue in this context. Gram Panchayats mobilisation of resources from both external and internal sources for its implication of various development programmes at rural level is to be taken into consideration. Though, the external sources, particularly the grants received from central and state government are the important sources of financial resources still today, the own sources of Gram Panchayats are also



equally important. The own resources not only provide self-reliance in resource mobilisation, but also ensures the stability in implementing the various development projects at rural areas. Among the various sources of internal revenue of the Gram Panchayats in Karnataka, Tax and Non-tax are important sources. Therefore, Gram Panchayats are working effectively based on these revenue sources. Central and State Governments have implemented several rural development programmes in rural areas, from 1950-51. Gram Panchayats function and service deliveries are very important for development of rural areas.

RESEARCH GAP:

While recent studies on PRIs in India have focused on issues concerning the role of Panchayats in poverty alleviation and employment generation programmes, resource allocation favouring disadvantaged groups and improved participation of women in decision-making process. The decentralisation system, fiscal devolution, local revenue sources, Property tax system, and the various dimensions of property tax have given a deep awareness of the facts. The study makes an attempt to analyse the relevance of local bodies, and the fiscal decentralisation. It is found that in relation to the local governance it is considered as an important means of the system of governance. Most of the studies on fiscal decentralization have focused on fiscal arrangements between the centre and the states. A serious shortcoming in Indian fiscal literature is its lack of attention to fiscal issues at local levels, particularly in rural areas. Little is known about the general public finances of PRIs and the fiscal relationship between state and native governments. Some studies have examined these issues which are descriptive and generalized, and not always supported by consistent data.

OBJECTIVES OF THE STUDY: The study is designed with the following objectives:

- To analyze the trends and patterns of revenue mobilization and expenditure by sources in the sample Gram Panchayats.
- To explore the people's perception regarding Gram Panchayats performance.
- To examine the performance of the rural development in better performance Gram Panchayats.
- for better To offer policy prescriptions performance of the Gram Panchayats in bringing about sustainable development of rural economy by the Gram Panchayats.

HYPOTHESES:

- A Positive association exists between Per-capita expenditure and Per-capita revenue mobilization.
- Share of own-source revenue mobilization is positively associated with better Performance of Gram Panchayats

RESEARCH METHODOLOGY:

Nature and source of data:

The present study is based on both primary and secondary data. The study follows an empirical approach to evaluate the performance of PRIs in revenue mobilization and expenditure in Karnataka. Secondary data is collected from State Planning Board, publications of Ministry of Local Self Administration, Government of Karnataka, Economic Survey, Census report, District at Glance, Ministry of Rural Development and etc..., have been reviewed from 2005 to 2015. For collection of data, two districts have been selected based on Gram Panchayats Physical Performance Index. From each district one taluk is selected which is based on high collection of Per capita own source revenue and from each taluk 1 Gram Panchayat have been selected based on high Per capita own source revenue.

The Study Area:

All 30 districts of Karnataka were classified into four categories based on the Gram Panchayat Performance Index as better, medium, poor and poorest. (MGNREGS, SBM, Water supply, Road, NRLM and Biogas) are some of the indicators to calculate the performance of Gram Panchayats. Among them two districts are selected in which one is from better performing and another from poorest performing Gram Panchayat Index Category. From each District one Taluk has been selected based on collection of Highest Per capita own source revenue. Similarly, from each taluk one Gram Panchayat have been selected in which, one is with high collection of Per capita own source revenue. Therefore, 2 Gram Panchayats have been selected for the study.

Sampling and Sample Size:

From each Gram Panchayat proportionately 50 respondents have been selected based on Stratified Random Sampling method. A total of 100 sample respondents have been selected for the study. Within 50 respondents in 100 samples, purposive sampling method is used for selection of SCs, STs and others Respondents. 15 respondents from



SCs, 10 respondents from STs, and 25 respondents from others categories have selected for collection of the opinion about Gram Panchayats service delivery and functions.

TOOLS OF DATA ANALYSES:

The study has employed simple statistical tools to analyze the collected data. Tabular Analysis, Percentage, Regression, Co-efficient of Variation, Compound Annual Growth Rate are some of the tools used in this study. The overall study is both analytical and descriptive one in nature.

IMPORTANCE OF THE STUDY:

Apart from backwardness within the districts there is poor management system at all the three levels of the Panchayats. The Gram Panchayats have put in their best efforts so as to supply basic amenities at the village level. The best learning from the Gram Panchayats is that “the team work of the elected representatives is for achievement of common good of their areas”. This clearly shows commitment and accountability of the people. Having understood that they can't fight the system individually, the members unite themselves for a standard goal, albeit this required them to travel an additional mile, so as to realize the goal. The enlightened approach of effectively leveraging the political influence of the local MLA not for a few personal gains except for the larger welfare of individuals has been the hallmark of Gram Panchayats functioning. But more important than this is that such convergence has got to be sustained at the grassroots level and this must be measured through quantitative and qualitative indicators. For this, there must be immense co-ordination and co-operation between the Taluk Panchayats, the departments, the Gram Panchayats and the public. It is also observed that Panchayats don't have incentives to supply even basic public infrastructure and services of a minimum standard to their citizens.

LIMITATIONS OF THE STUDY:

The study has focused on Gram Panchayats finance in Karnataka for a period of 10 years i.e. from 2005-06 to 2015-16. Respective Gram Panchayats PDO and Secretary did not have accurate information about the finance and service delivery issues. Due to lack of information about government's varying functions regarding the Gram Panchayat no proper documents were maintained. The study is based on limited field areas and is subject to limitations imposed by sampling types. Further, due to lack of awareness on the part of the respondent's suitable responses have not been acquired in rural development programmes. There is no awareness among people regarding the importance of Gram Panchayats revenue and expenditure.

RESULTS AND DISCUSSION:

To analyse the trends and patterns of revenue mobilization and expenditure by sources in the sample Gram Panchayats.

Figure 1. Illustrates the pattern of revenue in highest PCOSR Gram Panchayats. State statutory grants highest 59.63 percentage was found in Ugginakere compared with Golasangi with 52.66 percent in 2005-06. And Finance commission Grant was also quite high in Ugginakere compared with Golasangi Gram Panchayats in same year. But collection of own source revenue was significantly high in Golasangi compared with Ugginakere in 2005-06. Golasangi revenue mobilisation was quite high from the lowest financial support, but Ugginakere had failed in case of revenue mobilisation. Both Gram Panchayats have failed to raise their own source revenue, because the allocation of grant from the government has increased during 2005-06 to 2015-16. Consequently, Golasangi Gram Panchayats has got more revenue from State Statutory Grants and Finance Commission Grants compared with Ugginakere, therefore own source revenue has been quite less from 2011-12 to 2015-16. Finance Commission Grants has been significantly on the raise in both Gram Panchayats during 2005-06 to 2015-16. Central government has laid more emphasis on rural development in recent years therefore, therefore, recent years Finance Commission Grants have played a significant role in rural development during 2011-12 to 2015-16.

Table 1 shows the Regression of compound annual growth rate in sample Gram Panchayats. CAGR was quite high in Golasangi compared in Ugginakere between 2005-06 to 2015-16. Similarly, Finance Grant was statistically significant in other source of revenue in Golasangi compared to Ugginakere. Important thing is Ugginakere has effectively utilized the funds than Golasangi. Golasangi has failed to utilize the fund because of lack of awareness about utilization of fund and failure of people participation.

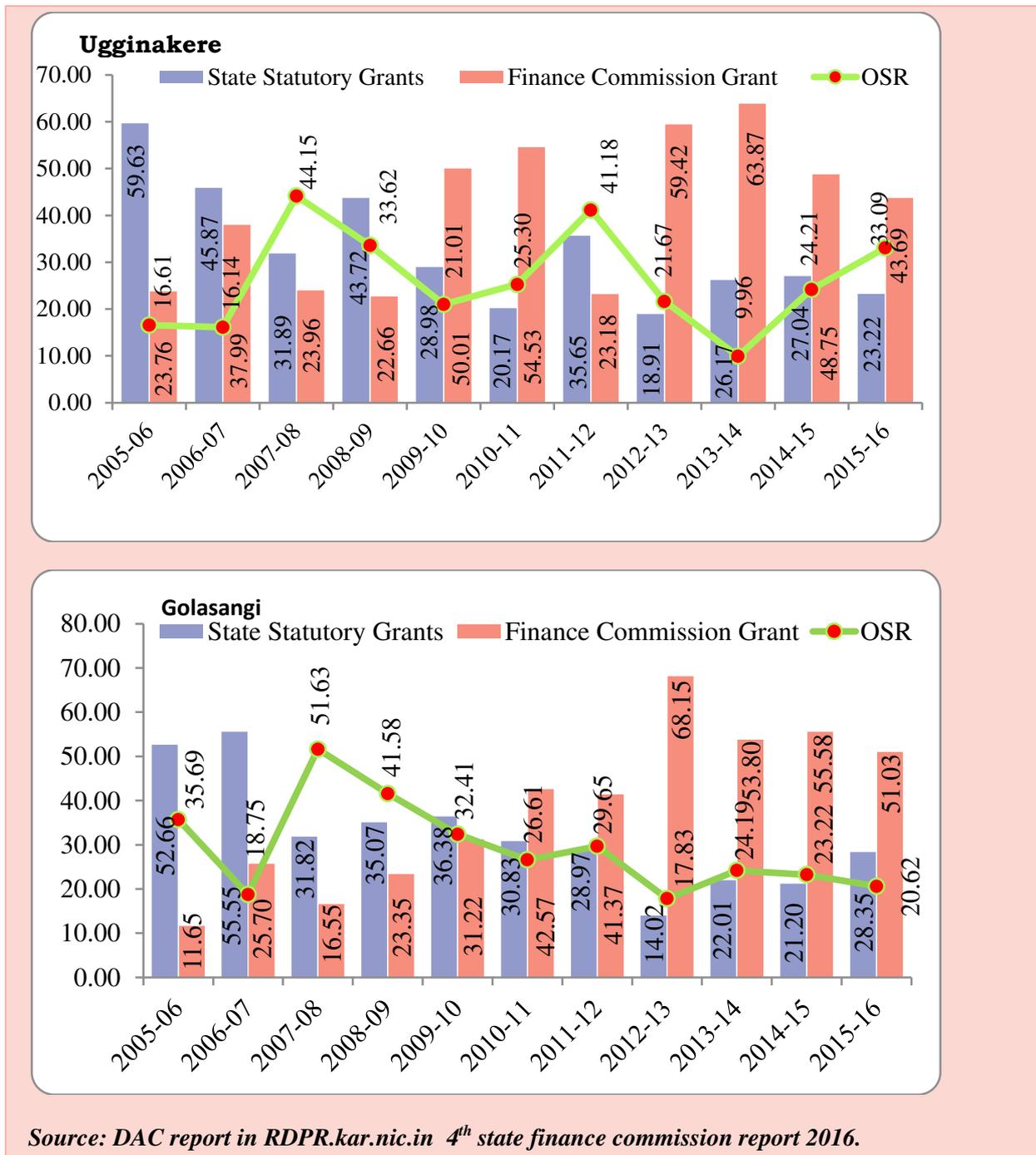


Figure 1: Pattern of Revenue by *Highest PCOSR Gram Panchayats (Percentage)

Table 1: Regression for Revenue sources of Highest PCOSR Gram Panchayats

Variables	Ugginakere			Golasangi		
	CAGR	t-value	Sig:	CAGR	t-value	Sig:
SSGrants	12.47853	4.081	0.00	11.700	0.775	0.458
FCGrants	27.96733	3.532	0.006	32.200	6.407	0.000
OSR	20.92547	4.308	0.002	11.400	2.914	0.017
Total	20.56361	4.411	0.002	23.018	3.833	0.004

Source: DAC report in RDPR.kar.nic.in 4th state finance commission report 2016.



Table 2, show the pattern of expenditure in highest PCOSR Gram Panchayats during 2005-06 to 2015-16. Both Gram Panchayats have two expenditure sources like administration expenditure and functional expenditure. In these two expenditure sources Ugginakere Gram Panchayat have made more expenditure i.e. 79.10 percent on functional activity than administration expenditure i.e. 20.90 percent. it's higher than Golasangi functional expenditure i.e. 33.73 percent. Golasangi has made more expenditure on administration than functional expenditure in the same year.

Table 2: Pattern of Expenditure on Highest PCOSR Gram Panchayats (Percentage)

Years	Ugginakere		Golasangi	
	Administration expenditure	Functional Expenditure	Administration expenditure	Functional Expenditure
2005-06	20.90	79.10	66.27	33.73
2006-07	27.60	72.40	92.86	7.14
2007-08	27.77	72.23	61.45	38.55
2008-09	40.46	59.54	60.22	39.78
2009-10	46.08	53.92	37.20	62.80
2010-11	71.56	28.44	72.49	27.51
2011-12	37.48	62.52	25.30	74.70
2012-13	32.68	67.32	35.15	64.85
2013-14	33.27	66.73	38.42	61.58
2014-15	3.13	96.87	35.65	64.35
2015-16	27.90	72.10	11.13	88.87

Source: DAC report in RDPR 4th state finance commission report 2016

To explore the people's perception regarding Gram Panchayats performance:

People Participation in Gram Sabha and Visit Gram Panchayat has been important movement for Development of Gram Panchayat through better understanding Panchayat function. Figure 2, illustrates the people's participation regarding the service delivery in sample Gram Panchayats. Peoples participation is also an important factor to detriment the collection of own source revenue of the respective Gram Panchayats. Total sample households were visited and it found that Ugginakere accounted for 86 percent which was better than Golasangi Gram Panchayat. Out of the total sample households SCs were 87 and STs were 80 percent.

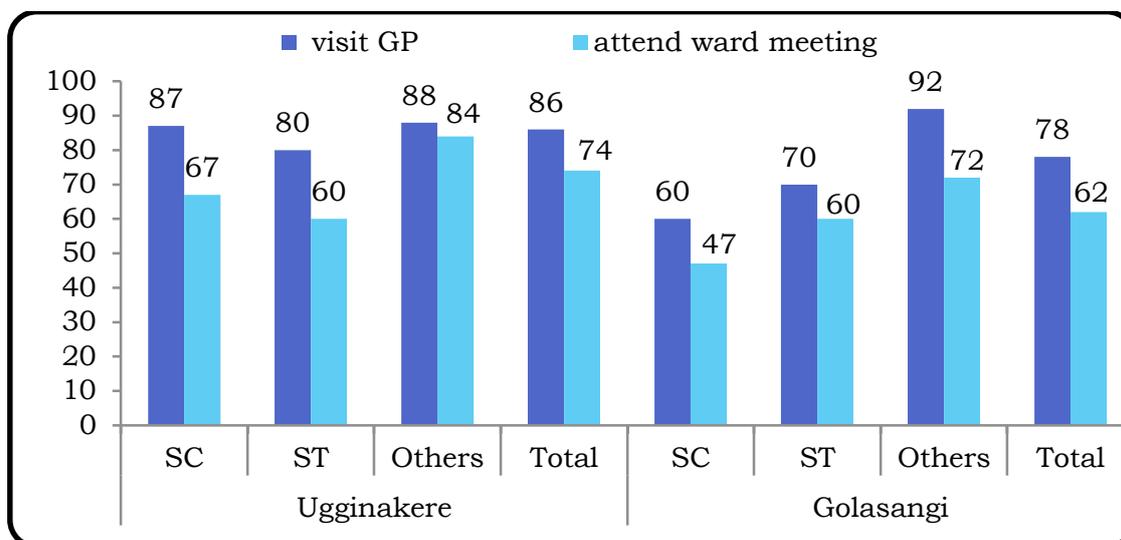


Figure 2: People Participation in Highest PCOSR Gram Panchayats (Percent)

Source: Field survey 2018



Most of the rural people did not agree for increase in the tax rate. People gave different opinion about the change in the tax rate. Total sample households in four Gram Panchayats the highest percentage of the people did not agree to increase the tax rate, the reason on quoted is low income. better performed Gram Panchayats sample households agreed to pay tax, while more benefited and some of the households who did not receive any facilities from the Gram Panchayats. Showed negative sing, the details are presented in Table 3.

Table 3: People perception regarding tax hike in Sample Gram Panchayats (Percent)

GPs		Categories	Is it suitable to increase tax		Reason		
			Yes	No	scarcity of income	Respondents did not receive any facility	more benefited
Highest PCOSR GPs	Ugginakere	SC	47	53	53	0	47
		ST	30	70	60	10	30
		Others	24	76	72	4	24
		Total	32	68	64	4	32
	Golasangi	SC	20	80	47	40	13
		ST	20	80	50	30	20
		Others	20	80	44	36	20
		Total	20	80	46	34	20

Source: Field survey 2018

To examine the performance of the rural development in better performance Gram Panchayats:

Figure 3, illustrates the water supply in sample Gram Panchayats; here Golasangi Gram Panchayat has better performance in water supply among social groups than Ugginakere Gram Panchayats. In terms of Gram Panchayat providing water tap has better service i. e. 60 percent in total households in Ugginakere Gram Panchayat compared with Golasangi which accounts to 58 percent in total households. Similarly, Golasangi has provided drinking water unit among social groups higher than Ugginakere Gram Panchayat. Ugginakere Gram Panchayat lagged behind quite less in terms of providing drinking water unit among social groups. Drinking water units did not work properly in Ugginakere compared to Golasangi Gram Panchayat.

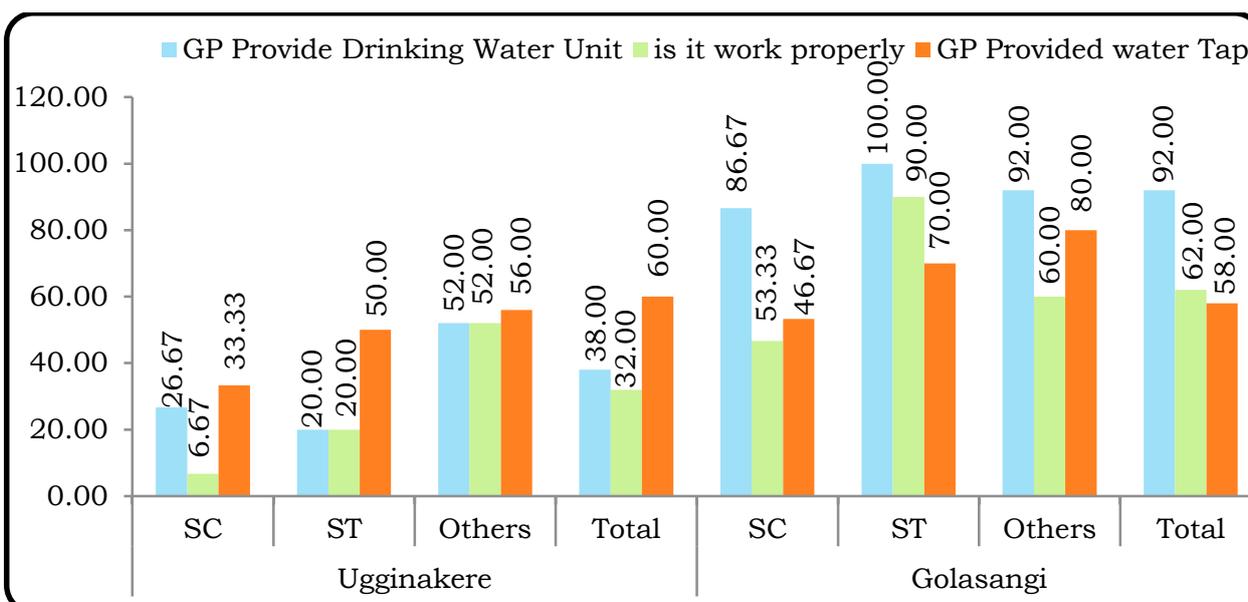


Figure 3: Peoples opinion about water service in Highest PCOSR Gram Panchayats (Percent)

Source: Field survey 2018. Maintenance of streetlights comes and street road under the jurisdiction of Gram Panchayats which is not being properly done. In many of the Gram Panchayats meters have not been installed for the supply of electricity for streetlights. Gram Panchayats financial burden is increasing due to heavy expenditure on electricity bills. In view of this, net flow of statutory grants to Gram Panchayats is getting reduced. Rural



Infrastructure Development and Finance Corporation should be given responsibility of maintaining Streetlights of rural electricity supply and maintain the good roads.

Figure 4, illustrates the condition of street Road and Street light in Sample Gram Panchayats in Dharwad and Vijayapur Districts. In field survey 32 percent of sample households expressed very good opinion about road condition in Ugginakere compared with Golasangi Gram Panchayat. But total sample households i.e. 68 percent of the households expressed good opinion about road condition in Golasangi. Condition of Street light facilities were better in Golasangi. Because 64 percent of sample households opined that Good street light facilities were being provided in Golasangi compared with Ugginakere Gram Panchayat.

Figure 5, illustrates the nature of toilet condition in highest PCOSR Gram Panchayats. Major of sample households i.e. 48 percent of total households got the facility in Ugginakere Gram Panchayat as compared to 30 percent in Golasangi Gram Panchayat. Similarly, Ugginakere Gram Panchayat provided 66.67percent toilet facility to SCs; it was higher than SCs i.e. 46.67 percent in Golasangi. Others have own toilet facility compared to SCs and STs in both Gram Panchayats. STs i.e. 70 percent highest number of people went for open defecation compared with SCs and others in Ugginakere Gram Panchayat. Therefore, STs are unable to get government facility in terms of toilet. Others i.e. highest number depended on open defecation in Golasangi compared with SCs and STs.

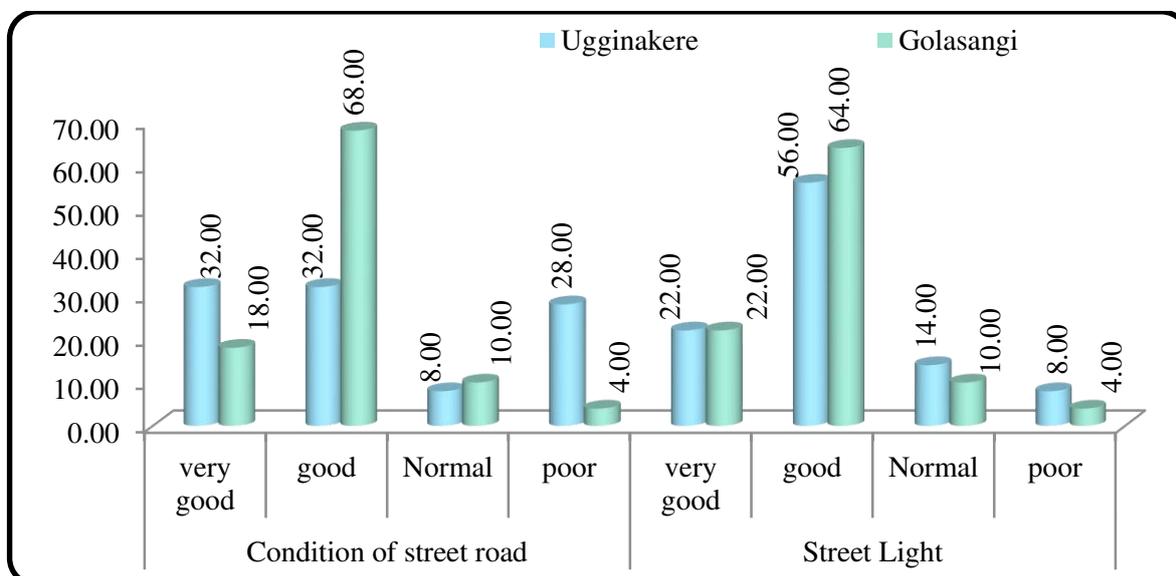


Figure 4: Condition of Road and Street Light in Highest PCOSR Gram Panchayats (Percent)

Source: Field survey 2018

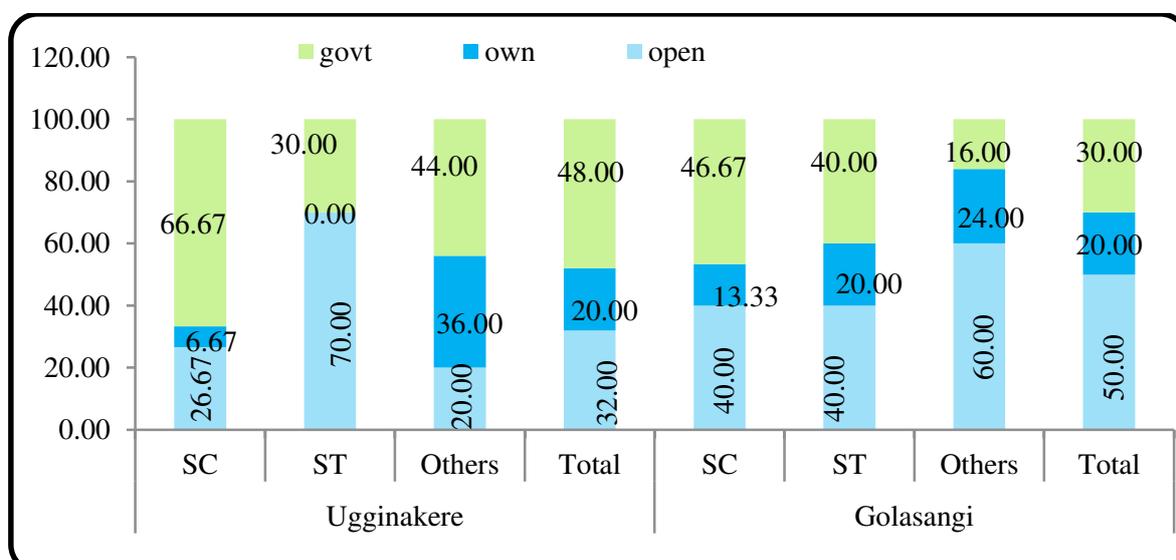


Figure 5: Nature of Toilet in Highest PCOSR Gram Panchayats (Percent).

Source: Field survey 2018



CONCLUSION:

Gram Panchayats have delivered better services to the people they have given good grade for performance of the Gram Panchayat service delivery. Ugginakere Performed better and have created awareness among people, Peoples participation and better implementation of rural development programmes and protection of the status of weaker sections of the society like the SCs/STs, and the provision of basic amenities in the respective Gram Panchayats in Dharwad district is noteworthy. Revenue sources were abundant in both Gram Panchayat. Ugginakere Gram Panchayat had failed to provide drinking water facility, because lack of water source in Ugginakere. Otherwise they would have provided better service to rural people. Ugginakere Gram Panchayat has more number of stone mining in their respective area. Therefore, it has collected more own source revenue than Golasangi.

For better To offer policy prescriptions performance of the Gram Panchayats in bringing about sustainable development of rural economy by the Gram Panchayats.

The important objectives of the study are: to analyse the trends and patterns of revenue mobilization and expenditure by sources in the sample Gram Panchayats; to explore the people's perception regarding Gram Panchayats performance; to examine the performance of the rural development in better performance Gram Panchayats. To offer policy prescriptions for better performance of the Gram Panchayats in bringing about sustainable development of rural economy by the Gram Panchayats. Along with these objectives certain working hypotheses are also set for the study. The important among them are: (1) A positive association exists between Per-capita expenditure and Per-capita revenue mobilisation. (2) Share of own source revenue mobilisation is positively associated with better performance of Gram Panchayats. As mentioned in the methodology content the study has used both primary and secondary data for achieving the above mentioned objectives. The existing status of decentralised planning is also discussed by the researcher. The role of Gram Panchayats finance on development of the rural areas through external and internal sources, concerned literature review on Gram Panchayat revenue sources are explored with the help of secondary data collected from various sources. The primary data is mainly resorted to identify various issues connected with the Gram Panchayat service deliveries and people's perceptions. The detailed primary data are collected from four Gram Panchayats from two Districts of Karnataka such as Ugginakere, from Dharwad district, Golasangi from Vijayapur District. A total of 100 sample households has been selected based on stratified random sampling method. The findings from the secondary and primary data analysis of the study are summarised into seven chapters. The first chapter covers introductory part of the research topic, brief history of Panchayat raj institution in India and Karnataka, analysis of different committee's recommendations for decentralisation system, 93rd amendment act of 1993, research gap, objectives of the study, hypothesis of the study and methodology of research, tools and techniques, importance of the research and limitation of the study. In the second chapter various theories have been discussed like Adam Smith's Canons of Taxation; Hicks theory, Dalton's "Principle of maximum Social Advantages" theory is used to build a theoretical frame work for the present study. An extensive review of literature in the chronological order has been carried out to know what has not been done in the earlier research studies, and thus the study has found a research gap. The third chapter elaborates geographical analysis, demographic, socio-economic analysis of the study areas. After third chapter, an elaborate exploration of the evolution of revenue sources and expenditure sources, problems of revenue mobilisation, people perception regarding Gram Panchayat service deliveries are discussed using secondary and primary data.

FINDINGS:

- Within better Gram Panchayats Ugginakere Gram Panchayat allocation of per-capita revenue and per-capita expenditure was better compared with Golasangi Gram Panchayat during 2005-06 to 2015-16.
- Golasangi revenue mobilization was quite highest from the lowest financial support, but Ugginakere had failed in case of revenue mobilization although it had got support from highest revenue.
- Ugginakere Gram Panchayat always put emphasis on functional activity than administrative activity from 2005-06 to 2015-16. But Golasangi gave importance only to functional activity after 2011-12.
- Highest per-capita own source revenue Gram Panchayats have provided better administrative services to the people. While collection of revenue was better compared to the lowest per-capita own source revenue Gram Panchayats.
- Sample SCs households have paid highest visit to Gram Panchayats in Dharwad district, then Vijayapur districts sample Gram Panchayats.
- Gram Panchayats have provided better services to the people and the sample households have attended ward meeting which was quite high in forward Gram Panchayats compared to backward Gram Panchayats.



- Highest toilet facilities in total sample households were found in forward Gram Panchayats in Dharwad, as compared forward Gram Panchayat in Vijayapur district.

POLICY SUGGESTIONS:

The Gram Panchayats have given voice and exit options to village people in local governance. In other words, political decentralization and fiscal decentralization has taken place at local level. But that is not sufficient because these rural people are not to be involved in mobilization and management of the fiscal resources at rural areas. The findings of the study are adequate testimony of this. But, at the same time, it is also a fact that whatever powers and authority have been given to the Gram Panchayats to raise additional resources has not been fully and adequately put into use by Gram Panchayats. Besides, the resources received from the Centre and the State Governments have also not been properly managed by them. Hence, keeping all these things in view, some suggestions have been put together here for effective mobilization and efficient management of the financial resources by the Gram Panchayats in the State.

- Respective Government should verify the documents of Selected Gram Panchayats in proper time.
- Government should provide proper financial facilities to sample Gram Panchayats in proper time.
- Accountable authority should provide the proper guidance to Gram Panchayat staff for different activities.
- Gram Panchayat should create awareness people among people to participate in ward meetings and Gram Panchayats meeting.
- Gram Panchayat should create awareness among people about the importance of paying the tax.
- State Governments must gradually put in place standards for delivery of all essential services provided by local bodies: Lack of resources often result in local bodies diluting the quality of services provided by them.

CONCLUSION:

The above analysis on Revenue and expenditure of Gram Panchayats clearly shows that the potential of the sources has not been fully utilized. Because Gram Panchayat are not aware of utilization of the revenue for development activities in respective area. Every year Government was allocated the revenue to Gram Panchayats for implementation of Panchayats responsibility, but respective Panchayats did not any idea, skills for effectively utilization of the allocated fund. Gram Panchayat staff have not maintained any proper documents in Gram Panchayat office. Poor performed Gram Panchayat has failed to create awareness about the Panchayat functions and, availability of facilities to rural people. Better performed Gram Panchayat has provided better service to rural people. Therefore, respective Panchayats have successfully generated their own source of revenue compared to poor performing Gram Panchayats.

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Impact of using groundwater as source of irrigation, on soil physico-chemical properties in northern parts of Ranebennur taluk, Haveri District, Karnataka

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Abstract: An investigation was carried out to assess groundwater quality, its impact on soil properties in Northern parts of Ranebennur taluk, Haveri district. Representative groundwater samples as well as soil samples each 150 number from study area were collected and geographical locations were registered at each sampling site. The results revealed that the pH of groundwater samples from ranged from 6.6 to 8.2 with an average value 7.21. Groundwater samples were neutral to slightly alkaline. The EC of groundwater samples were ranged from 0.68 to 5.67 dS m⁻¹ with an average value 3.30 dSm⁻¹. Among the different cations and anions, Na⁺ and Cl⁻ were predominant in groundwater followed by Ca²⁺, Mg²⁺, K⁺ and SO₄²⁻, HCO₃⁻, CO₃⁻, respectively. Nitrate and boron content had an average value of 13.26 mmol L⁻¹ and 0.57 ppm, respectively. The average Sodium Adsorption Ratio was 14.05 mmol L⁻¹. Residual Sodium Carbonates 1.15 mmol L⁻¹, Total Hardness 23.06 mg L⁻¹ and Total Dissolved Salts 2115.37 mg L⁻¹. The groundwater quality parameters were interpreted according to their standard classification using Arc.GIS with spatial analyst GIS software for map preparation. Soil pH (mean value of 7.50) in the study area was varied between neutral to moderately alkaline and EC of soil samples had mean value 2.04 dS m⁻¹. The average OC in soil samples was 4.07 g kg⁻¹ and CaCO₃ of 5.58 per cent. It is noted that available nitrogen and sulphur were found low to medium; Phosphorus and potassium were medium to high. The exchangeable Ca²⁺ and Mg²⁺ content had an average value of 32.25 [cmol(p+) kg⁻¹] and 11.76 [cmol(p+) kg⁻¹], respectively. Exchangeable sodium and exchangeable sodium per cent were of 4.25 [cmol(p+) kg⁻¹] and 10.27 per cent, respectively. Zinc content in soil found deficient, while Copper was low to medium in availability. The iron and manganese were between medium to excess, while the boron content was low to medium in status.

Key Words: water quality, remote sensing, GIS, sodium adsorption ratio.

INTRODUCTION:

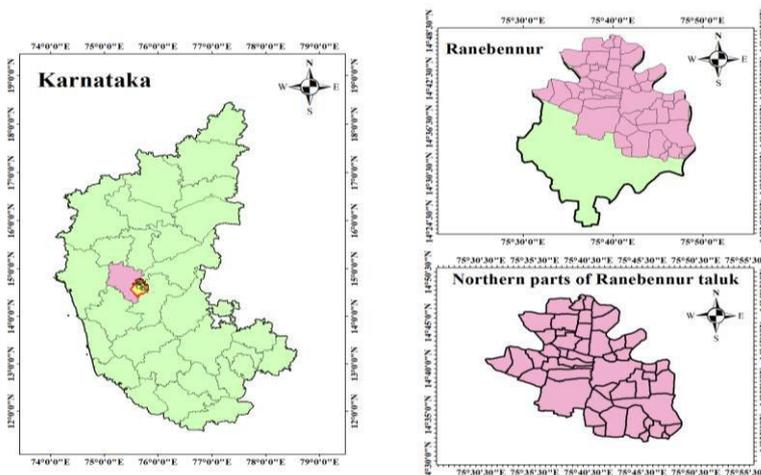
Water resources play significant role similar to that of agricultural land, the quality of irrigation water is a key factor in food security as well as nutritional security of the country. Groundwater is (naturally) recharged by rain water and snowmelt or from water that leaks through the bottom of some lakes and rivers. Quality of irrigation water is one of the main factors to be understood in irrigated agriculture. Injudicious irrigation practices even with good quality waters may turn many agriculturally good soils into saline or alkaline conditions, specific ion toxicity in plants and restricted water infiltration into soils with consequent adverse effects on crop production. Irrigation with saline groundwater further complicates the problem where the interactions of several factors are to be understood. The use of groundwater is inescapable in some areas where no alternative facility for irrigation is available; such water is being used in Karnataka as a whole and Ranebennur taluk of Haveri district in particular, knowingly the quality and yield of the crop would continuously decrease. Hence, it is important to know the extent of damage caused to land due to use of poor-quality underground water for irrigation. Agriculture is the main occupation in this taluk with net sown area accounts 70.88 per cent and area sown more than once is 16.15 per cent of total geographical area in Ranebennur taluk. 61.9 per cent of the net area irrigated is through bore wells (groundwater), 0.74 per cent of the net area is irrigated through lift irrigation and remaining 37.26 per cent of net area is irrigated through other sources (Anon, 2019). Soil fertility and ground water quality survey furnishes useful information for planning proper soil and water management practices, which in turn plays an important role in augmenting crop production in Northern parts of Ranebennur taluk.



MATERIAL AND METHODS:

Ranebennur taluk is at the geographical centre of Karnataka spreading over 901 sq. km. This taluk lies between 14.62°N and 75.62°E. with total geographical area is 90745 ha. One hundred and fifty groundwater samples from tube wells were collected from 50 villages covering Northern parts of Ranebennur taluk. The geographical location of each sample was taken with the help of GPS (Global Positioning System). The tube wells were first allowed to discharge water for about 15 minutes in order to get

sediment free clear water. Later the collected water samples were kept in the polyethylene bottles of 500 ml capacity. Each bottle was rinsed with the sample water before taking the water sample and 2-3 drops of toluene was added to avoid microbial growth. The bottles were then sealed airtight and labelled with sample code and village name. Water samples were filtered through ordinary filter paper for the removal of dirt and dust particles in the laboratory. The samples were properly labelled. All the water samples were subjected to chemical analysis for various parameters. Soil samples collected from the research area were subjected to analysis for various physico-chemical properties by adopting standard procedures.



RESULTS AND DISCUSSION:

The soil samples were collected from groundwater irrigated areas pertaining to Northern parts of Ranebennur Taluk. The soil samples were subjected to analysis of various chemical properties were presented in table 1 and were discussed as below.

Soil pH: The pH is important because it influences the availability of essential nutrients. Soil pH regulates plant nutrient availability by controlling the chemical forms of the different nutrients and also influence their chemical reactions. pH is a measure of hydrogen ion activity, presence of exchangeable bases such as calcium, magnesium and sodium gave a preponderance of hydroxyl ion over hydrogen ions. Soil sample collected from Airani village (Sample No. V₁S₂) recorded lower pH value. While higher pH value from Shidaganahal village (Sample No. V₄₀S₁). pH of study area was varied from neutral to moderately alkaline. Similar results were also reported by Huang *et al.* (2010) and Raut *et al.* (2017). Accumulation of bases especially Na⁺ under arid and semi-arid conditions seems to be the primary reason for saline and alkaline reaction.

Soil electrical conductivity (EC): Electrical conductivity is a measure of the amount of salts in soil (salinity of soil). It is an important indicator of soil health. Yakalasapur village (Sample No. V₁₀S₃) recorded lowest EC values and while highest EC values recorded from Choudayyanapur village (Sample No. V₄₆S₁). This increase in EC of soil samples might be due to accumulation of salt on the surface of soil. The higher EC values of soil due to continuous use of salt contained groundwater for irrigation in the study area. Similar results were also obtained by Bhat *et al.* (2016). Majority of soils have EC less than 2 dSm⁻¹ and could be regarded as non-saline soils (Richards, 1954). High EC values in soils due to irrigation with poor quality water and low-lying area, besides this low level of EC may be due to good drainage condition which favour the removal of bases by drainage water.

Soil organic carbon (OC): Soil organic carbon improves soil structure, the water holding capacity and rainfall infiltration properties of organic carbon soils create better landscape moisture availability. Root development and rainfall variation tolerance is also significantly enhanced in the soils with improved aggregation from carbon and contribute to nutrient retention and acts as source of carbon for microorganisms. Soil sample collected from Kunabev village (Sample No. V₃₀S₃) recorded lower organic carbon value. While higher organic carbon value from Channapur village (Sample No. V₇S₁). Removal of nutrients from the surface soil containing organic carbon due to continuous cropping without FYM or crop residues was responsible for the lower organic carbon content in some fields. Similar results with respect to low organic carbon content were reported by Basavaraju *et al.* (2005). The lower contents of



organic carbon apparently resulted because of high temperature which induced rapid rate of organic matter oxidation, while the declining trend towards accumulation of crop residues every year, without substantial downward movement (Kumar *et al.* 2015).

Soil calcium carbonate (CaCO_3): Calcium carbonate, the chief component of limestone, is a widely used amendment to neutralize soil acidity and to supply calcium for plant nutrition. In addition to buffering soil pH against acidification, soil carbonates are also important for sequestering heavy metals. Hanumapur village (Sample No. V_{16}S_3) recorded maximum CaCO_3 value. Soil sample collected from Gangapur village (Sample No. V_{12}S_2) recorded lower CaCO_3 value. The calcareousness of soil is common feature in the soils of arid and semiarid climate particularly in Vertisols (black soils) due to precipitation of carbonates and bicarbonates under water stress. Soils formed from basaltic rocks under semi-arid climatic condition, characterized by low precipitation and high rate of evaporation favouring more accumulation and precipitation of CaCO_3 (Singh and Kundu, 2010). Calcareousness and the value of CaCO_3 vary from horizons with a tendency to increase with depth. This may be due to semi-arid climatic condition, where the leaching of bicarbonates from upper layers and subsequent precipitation triggers development of sodicity in subsoils. The similar trend of CaCO_3 content was reported by Durgude (1999). Soil available nutrients were analysed from the soil samples collected from groundwater irrigated areas pertaining to Northern parts of Ranebennur taluk and the results are presented in table 2 and were discussed in detail as below

Soil Available Nitrogen (N): The soil fertility Available Nitrogen production rely upon nutrients supply is really important for plant growth (structure), plant food processing (metabolism) and creation of chlorophyll. Nitrogen concentration of irrigated soil samples were recorded highest value from Hullikatti village (Sample No. V_{21}S_2) and lowest value recorded from Konanatambigi village (Sample No. V_{28}S_2). The available nitrogen content in the soils is dependent on temperature, rainfall and altitude. Another possible reason may also be due to low organic matter content in these areas due to low rainfall and low vegetation facilitate faster degradation and removal of organic matter leading to nitrogen deficiency. The medium nitrogen status was noticed in some area may be due to application of Nitrogen fertilizer coupled with high vegetative cover. The variation in N content may be related to soil management, application of FYM and fertilizer to previous crop (Kumar *et al.* 2015).

Soil Available Phosphorus (P_2O_5): Available Phosphorus is one of the major soil nutrients and also constituent of plant cells and essential macro element required for plant nutrition. Soil sample collected from Kajjari village (Sample No. V_{24}S_3) recorded lower P_2O_5 value. While higher P_2O_5 value from Harangiri village (Sample No. V_{17}S_3). Medium status of available phosphorus in soils of study area might be due to alkaline soil reaction and low to medium content of CaCO_3 in the soil. At the higher pH calcium can precipitate with Phosphorus P as Calcium Phosphate and reduce Phosphorus availability. Similar results were also reported by Kumar *et al.* (2015). The red soils show low values of available phosphorus, which may be due to low CEC, clay content and acidic soil reaction of <6.5. The present findings are in line with those of Bidari *et al.* (2008).

Soil Available Potassium (K_2O): Available Potassium is the most abundant cation in plant cells and is the second most abundant nutrient after nitrogen in leaves. The potential of parent material together with a conservation biogeological cycle underlie maintenance of the supply of potassium to plants. K_2O of soil samples were highest Kamadod village (Sample No. V_{26}S_1). K_2O of soil samples were lowest value recorded from Kajjari village (Sample No. V_{24}S_3). Black soils show higher values than red soils due to predominance of K rich micaceous and feldspars minerals in parent material. Similar results were observed by Patel *et al.* (2019). In addition, Kaolinite type of clay mineralogy are the causes for their medium and low rating. The available K status of soils in the study area were medium to high, the variation in K status might be due to cultural practices, application of fertilizers, organic manures and other inputs perhaps may due to high clay content (>60 %). It has been observed that increase in organic carbon resulted in increased of available potassium content. This might be due to creation of favourable soil environment with the presence of high organic matter content of soil. Availability of potassium in soil is influenced by the process of weathering and type of clay minerals present. Such results were also reported by Tundup *et al.* (2015).

Soil Exchangeable Calcium (Ca^{2+}): The amount of Ca^{2+} attains importance in areas where soils are either strongly alkaline or acidic. Calcium is an electrovalent and the most abundant cations occupying the exchange sites of the soil colloids, both organic and inorganic. Calcium is an essential plant nutrient required by plants in relatively large amount. Because calcium has affinity for the exchange sites than sodium, added calcium can improve soil structure by displacing sodium, which allows the negatively charged clay particles to aggregate. Soil sample collected from Chikka



Kuravatti village (Sample No. V₉S₃) recorded lower Ca²⁺ value. While higher Ca²⁺ value from Ranebennur village (Sample No. V₃₉S₁). In both black and red soil, Ca²⁺ shows the strongest relationship with all the other species (Ca²⁺, Mg²⁺, K⁺ and Na⁺), it was clear that Mg²⁺ was present in low amount than Ca²⁺ because of its mobility. If soils are alkaline, these soils have high exchangeable Na. However, Ca is a suitable ion to replace this Na from the exchange complex. The replaced sodium forms sodium sulphate which is leached down. These results are in conformity with the findings of Sharma *et al.* (1996). The low value of exchangeable monovalent compared to divalent due to preferential leaching of monovalent than divalent.

Soil Exchangeable Magnesium (Mg²⁺): Magnesium is an essential plant nutrient and well known for its involvement in photosynthesis process, as it is a building block of chlorophyll, which makes leaves appear green. Magnesium deficiency might be a significant limiting factor in crop production. Soil sample collected from Airani village (Sample No. V₁S₂) recorded lower Mg²⁺ value. While higher Mg²⁺ value from Gangapur village (Sample No. V₁₂S₃). Availability of calcium and magnesium to the crops do not generally pose problems in black soils, as these soils are calcareous in nature. High values of CEC and exchangeable Ca²⁺ and Mg²⁺ is an indication of dominance of clay mineral as reported by Nayak *et al.* (2002). The exchangeable Ca²⁺ and Mg²⁺ activity may be attributed to the type and amount of clay, present in these soils.

Soil available Sulphur (S): Sulphur is essential for the growth and development of all crops; sulphur also have some key functions in plants. The major sulphur source under natural conditions is the organic matter. More than 95 per cent of total sulphur in soil is present in the organic matter. Soil sample collected from Nalawagala village (Sample No. V₃₄S₁) recorded lower SO₄²⁻ value. While, higher SO₄²⁻ value from Ramapur village (Sample No. V₃₈S₃). Black soils have high gypsum and ferrous nature of sulphur which is non-available form (Basavaraju *et al.* 2005). Soil gets sulphur from the groundwater and rain water, fertilizer, fungicide and atmosphere. Sulphur become available with increase in decomposition of the organic matter in soil. Thus, in the arid and semi-arid regions, much of the sulphur in the soil may not in the organic form. Due to obvious reasons, the inorganic forms of sulphur are high under this condition. These results are in confirmation with the findings of Yeresheemi *et al.* (1997). Secondary nutrients in soil may be lost due to crop removal, leaching, erosion and volatilization. The amount of secondary nutrients re-moved by crops depends on soil type, crop species, fertilizer source and yield level. It is noted that N and S nutrients were found low to medium and P and K nutrients are medium to high in the soil samples.

Soil Exchangeable Sodium: The characteristic of soils from the agricultural stand point is that they contain sufficient exchangeable sodium to adversely affect the growth of most crop plants. Excess exchangeable sodium has an adverse effect on the physical and nutritional properties of the soil, with consequent reduction in crop growth, significantly or entirely. The soils lack appreciable quantities of neutral soluble salts but contain measurable to appreciable quantities of salts capable of alkaline hydrolysis, e.g., Sodium carbonate. Soil sample collected from Kunabev village (Sample No. V₃₀S₃) recorded lower exchangeable sodium value. While higher exchangeable sodium value from Heeladahalli village (Sample No. V₁₈S₁). High exchangeable sodium in soils had marked influence on the physical soil properties due to dispersion of soil particles. The rises in pH due to high exchangeable sodium interfere in the availability of nutrients. The present results get support from the findings of Nayak *et al.* (2002).

Exchangeable Sodium Per cent: The chief characteristic of soils from the agricultural stand point is that they contain sufficient exchangeable sodium to adversely affect the growth of most crop plants. Excess exchangeable sodium has an adverse effect on the physical and nutritional properties of the soil, with consequent reduction in crop growth, significantly or entirely. The soils lack appreciable quantities of neutral soluble salts but contain measurable to appreciable quantities of salts capable of alkaline hydrolysis, e.g., Sodium carbonate. The exchangeable sodium percentage is calculated with the help of exchangeable sodium and cation exchange capacity. Kajjari village (Sample No. V₂₄S₃) recorded lower exchangeable sodium percentage content. While higher exchangeable sodium percentage content recorded from Heeladahalli village (Sample No. V₁₈S₁). Higher ESP content due to the soils of arid and semi-arid regions nearly always contain some calcium carbonate, a build-up in the exchangeable sodium in the absence of an appreciable quantity of neutral soluble salts will always result in high pH; the exact value depending on the concentration of Na₂CO₃, formed or the level of ESP. As the soils of the study are light in texture the exchangeable sodium percentage value about 15, does not reduce the permeability of the soils, thus movement of air, water and crop growth are not affected. These results are in conformity with the findings of Nayak *et al.* (2002).



CONCLUSIONS:

The soil samples collected from the groundwater irrigated fields were analysed for various physico-chemical properties and the results showed that bulk density of soil samples collected from groundwater irrigated areas had an average value of 1.35 g cc⁻¹ and porosity of soil samples had an average value of 49.18 per cent. The water holding capacity of soil samples collected from groundwater irrigated fields had mean value of 42.73 per cent and aggregate stability (MWD) of soil samples with an average value of 0.48 mm. It was observed that pH of soil samples collected from groundwater irrigated areas had an average value of 7.50. Soil pH of the study area was varied from neutral to moderately alkaline and EC of soil samples had a mean value of 2.04 dS m⁻¹. The OC content of soil samples had an average value of 4.07 g kg⁻¹ and CaCO₃ content with a mean value of 5.34 per cent. The soil available nutrients viz., N, P₂O₅, K₂O and SO₄²⁻ contents of soil samples had mean values of 318.51 kg ha⁻¹, 43.33 kg ha⁻¹, 277.60 kg ha⁻¹ and 26.61 kg ha⁻¹, respectively. The exchangeable Ca²⁺ and Mg²⁺ contents had average values of 32.25 [cmol(p+) kg⁻¹] and 11.76 [cmol(p+) kg⁻¹], respectively. Exchangeable sodium and exchangeable sodium per cent in the soil samples of groundwater irrigated areas had an average value of 4.25 [cmol(p+) kg⁻¹] and 10.27 per cent, respectively. Majority of the irrigated soil samples have salinity and alkalinity problem and also noted that N and SO₄²⁻ nutrients were found low to medium, P₂O₅ and K₂O nutrients were medium to high.

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Table 1: Chemical properties of soil samples collected from groundwater irrigated areas in Northern parts of Ranebennur Taluk

Village Name	Sample No.	pH	EC (dSm ⁻¹)	OC (g kg ⁻¹)	CaCO ₃ (%)
Airani	V ₁ S ₁	7.45	0.60	3.70	5.20
	V ₁ S ₂	6.58	3.60	4.10	4.90
	V ₁ S ₃	7.15	1.29	3.80	5.01
Ankasapur	V ₂ S ₁	7.95	0.83	3.60	6.76
	V ₂ S ₂	6.85	1.49	4.40	4.88
	V ₂ S ₃	7.94	2.00	4.10	3.90
Aremallapur	V ₃ S ₁	7.70	1.07	4.30	6.50
	V ₃ S ₂	8.05	1.37	5.10	7.90
	V ₃ S ₃	7.90	2.28	3.00	6.02
Belur	V ₄ S ₁	6.79	0.94	3.50	2.88
	V ₄ S ₂	7.20	3.14	4.90	4.90
	V ₄ S ₃	7.22	1.04	5.30	4.76
Bevinahalli	V ₅ S ₁	7.32	0.40	4.30	4.92
	V ₅ S ₂	7.20	1.34	5.10	4.12
	V ₅ S ₃	7.00	1.53	5.60	3.90
Chalageri	V ₆ S ₁	7.30	0.70	3.20	4.30
	V ₆ S ₂	7.13	4.67	4.50	4.79
	V ₆ S ₃	7.21	3.03	4.10	4.93
Channapur	V ₇ S ₁	8.00	1.16	5.90	7.02
	V ₇ S ₂	7.35	2.57	4.20	4.09
	V ₇ S ₃	7.40	3.35	4.00	4.15
Chikka Aralahalli	V ₈ S ₁	6.80	2.01	4.30	3.11
	V ₈ S ₂	7.35	0.98	3.90	4.90
	V ₈ S ₃	7.20	3.10	3.20	4.50
Chikka Kuravatti	V ₉ S ₁	7.40	2.69	3.50	5.06
	V ₉ S ₂	7.38	2.36	3.50	5.76
	V ₉ S ₃	7.40	3.46	3.90	3.90
Choudayyanapur	V ₁₀ S ₁	8.00	1.57	4.50	4.02
	V ₁₀ S ₂	7.08	2.43	4.20	5.01
	V ₁₀ S ₃	6.80	4.89	4.40	7.88
Devagondana katti	V ₁₁ S ₁	7.80	3.46	4.40	8.01
	V ₁₁ S ₂	7.15	2.30	4.70	6.90
	V ₁₁ S ₃	7.92	1.41	5.20	4.80
Gangapur	V ₁₂ S ₁	8.01	3.13	3.80	7.47
	V ₁₂ S ₂	6.74	0.90	3.70	2.31
	V ₁₂ S ₃	7.09	2.81	3.30	3.25
Gudagur	V ₁₃ S ₁	8.13	1.48	4.90	7.99
	V ₁₃ S ₂	7.32	3.07	4.50	4.77
	V ₁₃ S ₃	7.57	2.92	4.30	5.95
Guddadanveri	V ₁₄ S ₁	7.30	0.93	5.00	4.79
	V ₁₄ S ₂	7.81	1.79	5.10	5.88
	V ₁₄ S ₃	7.90	2.10	3.50	6.77
Guddaguddapur	V ₁₅ S ₁	7.45	0.47	3.80	5.11
	V ₁₅ S ₂	8.01	3.63	4.20	7.87
	V ₁₅ S ₃	7.20	2.13	4.30	4.05
Hanumapur	V ₁₆ S ₁	7.50	1.45	3.90	5.12
	V ₁₆ S ₂	7.95	4.02	4.40	5.83
	V ₁₆ S ₃	7.85	2.04	3.60	6.88
Harangiri	V ₁₇ S ₁	7.30	1.82	3.50	4.20



Village Name	Sample No.	pH	EC (dSm ⁻¹)	OC (g kg ⁻¹)	CaCO ₃ (%)
	V ₁₇ S ₂	6.76	1.31	3.10	3.09
	V ₁₇ S ₃	7.60	2.25	4.10	5.79
Heeladahalli	V ₁₈ S ₁	7.42	4.56	3.70	5.13
	V ₁₈ S ₂	7.24	2.31	4.30	4.95
	V ₁₈ S ₃	7.50	1.49	4.00	5.17
Hirebidari	V ₁₉ S ₁	8.10	1.47	4.10	7.34
	V ₁₉ S ₂	7.15	2.54	4.50	3.07
	V ₁₉ S ₃	7.95	2.36	3.80	5.17
Honnatti	V ₂₀ S ₁	7.70	3.34	3.00	6.86
	V ₂₀ S ₂	8.20	3.07	4.80	7.71
	V ₂₀ S ₃	7.95	2.02	4.70	6.95
Hullikatti	V ₂₁ S ₁	7.60	0.65	2.90	5.10
	V ₂₁ S ₂	7.10	1.34	3.30	3.81
	V ₂₁ S ₃	7.97	2.54	3.20	6.93
Hullatti	V ₂₂ S ₁	6.90	4.00	3.30	3.12
	V ₂₂ S ₂	7.72	3.49	3.70	6.83
	V ₂₂ S ₃	7.09	2.70	4.10	3.78
Hunashikatti	V ₂₃ S ₁	7.72	2.16	3.60	5.08
	V ₂₃ S ₂	7.88	0.73	3.90	6.95
	V ₂₃ S ₃	6.87	3.49	4.20	3.79
Kajjari	V ₂₄ S ₁	7.70	4.34	4.30	5.86
	V ₂₄ S ₂	6.90	1.17	4.50	3.67
	V ₂₄ S ₃	7.15	2.48	4.10	4.77
Kakol	V ₂₅ S ₁	8.00	4.25	4.30	7.09
	V ₂₅ S ₂	7.27	2.31	4.40	4.10
	V ₂₅ S ₃	7.14	4.40	5.10	4.37
Kamadod	V ₂₆ S ₁	7.85	0.87	3.80	6.71
	V ₂₆ S ₂	7.90	3.99	5.30	7.13
	V ₂₆ S ₃	8.00	1.27	5.10	7.27
Karur	V ₂₇ S ₁	7.90	1.39	3.00	6.78
	V ₂₇ S ₂	7.80	3.52	3.50	6.65
	V ₂₇ S ₃	6.82	2.42	3.80	3.79
Konanatambigi	V ₂₈ S ₁	7.90	0.85	3.50	7.03
	V ₂₈ S ₂	7.90	1.18	3.30	7.15
	V ₂₈ S ₃	7.96	2.23	3.80	7.23
Kudrihal	V ₂₉ S ₁	7.35	1.06	3.30	4.84
	V ₂₉ S ₂	7.70	2.39	3.90	4.99
	V ₂₉ S ₃	7.50	1.53	3.10	5.82
Kunabev	V ₃₀ S ₁	7.90	0.47	3.00	6.04
	V ₃₀ S ₂	7.25	1.80	3.30	4.23
	V ₃₀ S ₃	7.15	3.15	2.10	4.15
Maidur	V ₃₁ S ₁	6.79	1.48	5.80	3.95
	V ₃₁ S ₂	7.22	1.49	5.10	4.37
	V ₃₁ S ₃	7.15	2.94	4.50	4.13
Medleri	V ₃₂ S ₁	6.90	1.37	2.90	3.10
	V ₃₂ S ₂	7.85	2.24	3.70	6.65
	V ₃₂ S ₃	7.95	2.16	3.30	6.89
Nadiharalalli	V ₃₃ S ₁	7.70	4.55	3.60	7.28
	V ₃₃ S ₂	7.10	0.72	3.90	3.83
	V ₃₃ S ₃	7.15	2.20	4.20	4.18



Nalawagala	V ₃₄ S ₁	8.30	0.95	2.90	7.56
	V ₃₄ S ₂	7.20	0.54	4.30	3.53
	V ₃₄ S ₃	7.13	2.02	4.60	4.21
Nukapur	V ₃₅ S ₁	8.30	1.12	2.80	7.89
	V ₃₅ S ₂	7.36	2.46	4.50	5.11
	V ₃₅ S ₃	8.24	2.09	4.20	7.22
Padmavathipur	V ₃₆ S ₁	7.70	1.56	3.90	5.07
	V ₃₆ S ₂	7.20	2.34	4.80	4.87
	V ₃₆ S ₃	7.45	0.67	4.30	5.81
Rahutanakatti	V ₃₇ S ₁	8.40	1.06	2.80	7.95
	V ₃₇ S ₂	7.20	2.16	4.20	4.04
	V ₃₇ S ₃	7.36	4.50	4.10	4.99
Ramapur	V ₃₈ S ₁	6.97	2.31	3.60	3.35
	V ₃₈ S ₂	7.01	1.12	3.90	3.22
	V ₃₈ S ₃	7.50	0.62	3.70	4.79
Ranebennur	V ₃₉ S ₁	8.60	0.70	4.50	8.19
	V ₃₉ S ₂	7.45	4.57	4.10	5.92
	V ₃₉ S ₃	7.43	1.27	3.90	5.76
Shidaganahal	V ₄₀ S ₁	8.90	1.30	4.80	8.79
	V ₄₀ S ₂	8.34	2.50	5.10	8.36
	V ₄₀ S ₃	7.10	1.46	5.30	3.77
Shrinivasapur	V ₄₁ S ₁	7.47	3.18	5.60	4.60
	V ₄₁ S ₂	7.93	2.02	5.50	5.72
	V ₄₁ S ₃	6.95	0.91	4.60	3.33
Somlapur	V ₄₂ S ₁	7.80	0.80	4.30	5.42
	V ₄₂ S ₂	7.20	1.35	4.40	3.04
	V ₄₂ S ₃	7.60	0.51	3.90	5.03
Udagatti	V ₄₃ S ₁	8.00	3.36	2.90	7.06
	V ₄₃ S ₂	7.95	0.48	3.00	6.22
	V ₄₃ S ₃	7.79	1.54	4.50	6.03
Venkatapur	V ₄₄ S ₁	8.10	0.48	3.20	6.88
	V ₄₄ S ₂	7.15	2.45	4.40	5.03
	V ₄₄ S ₃	7.30	1.48	3.90	5.88
Waderayanahalli	V ₄₅ S ₁	6.87	2.70	4.10	3.13
	V ₄₅ S ₂	7.37	0.95	3.90	4.06
	V ₄₅ S ₃	7.22	1.25	4.30	4.02
Yakalapur	V ₄₆ S ₁	7.20	0.39	3.20	3.99
	V ₄₆ S ₂	8.10	1.47	4.10	7.35
	V ₄₆ S ₃	7.60	3.22	3.90	5.03
Yallapur T medleri	V ₄₇ S ₁	6.83	1.07	4.00	3.04
	V ₄₇ S ₂	7.92	1.96	5.50	6.82
	V ₄₇ S ₃	7.01	2.13	4.80	3.84
Yattinahalli	V ₄₈ S ₁	7.36	1.28	4.50	4.05
	V ₄₈ S ₂	7.98	2.19	4.60	6.78
	V ₄₈ S ₃	6.92	0.90	3.90	3.22
Yellapur T honnatti	V ₄₉ S ₁	7.45	1.23	5.20	5.11
	V ₄₉ S ₂	7.36	4.59	4.20	5.04
	V ₄₉ S ₃	8.25	1.46	3.20	6.03
Yennihosahali	V ₅₀ S ₁	7.79	1.34	3.60	6.88
	V ₅₀ S ₂	7.31	2.64	3.60	5.34
	V ₅₀ S ₃	7.25	1.07	4.10	5.12
Minimum		6.58	0.39	2.10	2.31



Maximum	8.90	4.89	5.90	8.79
Mean	7.50	2.04	4.07	5.34
S.D	0.44	1.11	0.72	1.47
C.V	5.91	54.50	17.88	27.49

Table 2. Available nutrients status of soil samples collected from groundwater irrigated areas in Northern parts of Ranabennur taluk

Village Name	Sample No.	Primary nutrients			Secondary nutrients			Ex-Na ⁺ cmol(p+) kg ⁻¹	ESP
		kg ha ⁻¹			cmol(p+) kg ⁻¹		kg ha ⁻¹		
		N	P ₂ O ₅	K ₂ O	Ex-Ca ²⁺	Ex-Mg ²⁺			
Airani	V ₁ S ₁	386.41	58.17	309.12	22.20	15.40	33.75	2.03	11.68
	V ₁ S ₂	404.23	27.94	222.56	19.80	9.20	18.00	7.57	15.90
	V ₁ S ₃	336.24	57.25	255.36	22.00	15.00	35.00	5.43	6.87
Ankasapur	V ₂ S ₁	229.65	60.00	395.68	31.80	14.20	20.62	6.28	7.76
	V ₂ S ₂	333.85	29.77	282.24	27.55	16.00	27.37	5.90	12.48
	V ₂ S ₃	323.25	51.53	255.36	22.20	16.50	17.00	3.65	4.06
Aremallapur	V ₃ S ₁	347.41	39.39	241.92	20.20	12.20	32.00	3.07	12.66
	V ₃ S ₂	189.04	30.92	239.23	32.45	13.50	24.87	3.59	10.56
	V ₃ S ₃	337.87	35.27	282.24	20.50	14.40	31.25	5.04	14.18
Belur	V ₄ S ₁	426.00	30.69	236.00	35.00	16.40	17.87	3.79	10.16
	V ₄ S ₂	233.25	40.08	322.56	23.24	13.50	32.50	7.80	17.60
	V ₄ S ₃	325.20	35.72	255.36	22.56	9.60	16.87	6.38	16.09
Bevinahalli	V ₅ S ₁	258.56	65.95	224.44	26.60	16.80	28.12	1.59	9.89
	V ₅ S ₂	335.52	56.33	254.01	37.34	14.60	25.75	5.80	8.91
	V ₅ S ₃	254.42	35.95	208.32	23.45	13.70	20.62	4.42	5.29
Chalageri	V ₆ S ₁	362.64	35.27	366.11	20.23	9.40	33.12	1.89	6.94
	V ₆ S ₂	254.28	61.14	263.42	19.77	16.70	30.75	1.96	14.42
	V ₆ S ₃	344.63	29.31	262.08	18.33	16.80	16.50	6.80	14.17
Channapur	V ₇ S ₁	265.12	35.50	213.69	23.20	12.50	25.00	3.17	6.11
	V ₇ S ₂	189.34	58.62	337.88	22.34	15.60	35.00	2.92	4.29
	V ₇ S ₃	248.56	44.88	224.44	36.40	13.60	32.37	4.09	5.09
Chikka Aralahalli	V ₈ S ₁	357.83	32.52	282.24	26.40	14.20	26.00	2.78	12.81
	V ₈ S ₂	335.20	28.63	255.36	30.60	12.50	19.37	3.59	8.37
	V ₈ S ₃	353.45	31.14	241.92	22.11	15.60	30.00	1.75	6.79
Chikka Kuravatti	V ₉ S ₁	198.04	60.91	339.23	23.60	16.60	20.25	2.59	12.80
	V ₉ S ₂	325.82	63.20	282.24	19.89	14.60	31.12	4.12	8.40
	V ₉ S ₃	413.05	30.92	336.00	14.50	13.50	18.00	1.81	17.68
Choudayyanapur	V ₁₀ S ₁	242.26	37.56	322.56	22.80	9.40	24.75	6.69	10.43
	V ₁₀ S ₂	366.20	42.59	255.36	22.40	15.60	26.75	5.49	13.37
	V ₁₀ S ₃	200.55	28.85	324.44	35.34	14.60	29.12	7.75	16.62
Devagondana katti	V ₁₁ S ₁	357.52	38.47	254.01	28.00	9.80	29.25	4.69	7.61
	V ₁₁ S ₂	205.40	65.49	308.32	20.20	16.60	26.62	1.87	12.35
	V ₁₁ S ₃	234.49	44.88	309.12	30.25	15.60	31.00	3.89	10.10
Gangapur	V ₁₂ S ₁	424.26	33.43	322.56	26.00	14.60	23.75	6.48	13.46
	V ₁₂ S ₂	357.28	60.91	255.36	24.67	16.60	16.12	3.28	10.78
	V ₁₂ S ₃	306.60	34.12	395.68	27.38	16.90	30.00	2.65	12.66
Gudagur	V ₁₃ S ₁	252.85	63.20	282.24	33.40	14.60	32.25	5.24	7.62
	V ₁₃ S ₂	305.20	40.30	255.36	30.23	15.60	24.75	5.60	12.04
	V ₁₃ S ₃	334.40	38.47	341.92	21.34	16.80	32.50	2.23	9.89
Guddadanveri	V ₁₄ S ₁	193.04	42.14	239.23	25.60	12.40	29.00	4.99	8.75



Village Name	Sample No.	Primary nutrients			Secondary nutrients			Ex-Na ⁺ cmol(p+) kg ⁻¹	ESP
		kg ha ⁻¹			cmol(p+) kg ⁻¹		kg ha ⁻¹		
		N	P ₂ O ₅	K ₂ O	Ex-Ca ²⁺	Ex-Mg ²⁺			
	V ₁₄ S ₂	331.80	38.47	282.24	23.24	11.80	19.50	4.51	15.57
	V ₁₄ S ₃	257.04	31.37	309.12	20.50	12.70	36.12	4.41	14.92
	Guddaguddapur	V ₁₅ S ₁	424.20	36.18	322.56	34.60	12.80	18.00	3.06
V ₁₅ S ₂		361.23	63.66	355.36	22.45	13.80	28.87	3.58	13.26
V ₁₅ S ₃		236.53	33.66	295.68	25.34	14.70	22.50	2.26	8.94
Hanumapur	V ₁₆ S ₁	303.52	60.91	282.24	26.68	12.60	27.12	4.97	11.59
	V ₁₆ S ₂	261.40	40.53	355.36	30.55	11.70	36.12	6.02	15.93
	V ₁₆ S ₃	332.63	33.43	241.92	21.45	10.60	19.00	3.05	12.77
Harangiri	V ₁₇ S ₁	245.28	60.00	239.23	30.27	12.20	37.25	5.50	4.15
	V ₁₇ S ₂	321.63	31.60	282.24	23.24	15.80	17.87	3.87	6.49
	V ₁₇ S ₃	262.12	68.01	336.00	22.99	16.70	36.75	6.34	12.14

Village Name	Sample No.	Primary nutrients			Secondary nutrients			Ex-Na ⁺ cmol(p+) kg ⁻¹	ESP
		kg ha ⁻¹			cmol(p+) kg ⁻¹		kg ha ⁻¹		
		N	P ₂ O ₅	K ₂ O	Ex-Ca ²⁺	Ex-Mg ²⁺			
Heeladahalli	V ₁₈ S ₁	195.36	53.13	322.56	34.00	13.20	29.75	7.82	18.06
	V ₁₈ S ₂	268.53	38.01	255.36	22.34	15.60	21.62	3.23	12.28
	V ₁₈ S ₃	342.80	56.33	324.44	36.45	14.60	27.37	4.36	7.57
Hirebidari	V ₁₉ S ₁	362.23	36.18	254.01	22.60	15.80	27.00	4.01	6.12
	V ₁₉ S ₂	351.80	64.58	308.32	23.45	16.20	32.00	3.51	3.82
	V ₁₉ S ₃	332.23	42.82	266.11	18.00	15.70	24.87	4.89	8.06
Honnatti	V ₂₀ S ₁	344.40	37.10	263.42	25.80	12.20	31.25	4.03	9.78
	V ₂₀ S ₂	193.04	33.43	262.08	34.56	14.60	34.87	4.87	6.90
	V ₂₀ S ₃	362.84	35.50	313.69	17.67	11.50	32.50	4.33	16.28
Hullikatti	V ₂₁ S ₁	344.00	38.01	237.88	20.40	16.60	16.87	3.42	5.90
	V ₂₁ S ₂	462.24	40.30	224.44	23.56	14.60	28.12	3.05	12.84
	V ₂₁ S ₃	336.24	31.14	382.24	30.88	13.60	25.75	2.37	12.85
Hullatti	V ₂₂ S ₁	351.84	35.72	255.36	30.48	12.60	30.62	6.70	16.79
	V ₂₂ S ₂	317.05	59.77	241.92	23.45	12.70	23.12	1.92	14.55
	V ₂₂ S ₃	316.40	28.85	239.23	19.67	16.60	30.75	2.49	10.45
Hunashikatti	V ₂₃ S ₁	193.06	52.67	282.24	26.40	12.00	16.50	2.29	12.08
	V ₂₃ S ₂	344.26	38.24	236.00	26.00	14.70	35.00	3.81	11.08
	V ₂₃ S ₃	327.48	33.43	322.56	24.56	14.60	25.00	2.31	7.92
Kajjari	V ₂₄ S ₁	242.07	44.88	355.36	32.45	12.60	26.75	6.86	15.83
	V ₂₄ S ₂	223.86	58.85	224.44	21.45	12.70	19.12	3.19	6.18
	V ₂₄ S ₃	261.05	23.13	354.01	36.00	10.10	29.25	4.46	3.33
Kakol	V ₂₅ S ₁	417.24	36.18	309.12	24.20	11.80	26.62	7.53	16.44
	V ₂₅ S ₂	373.25	28.85	322.56	22.13	14.60	21.00	1.99	6.80
	V ₂₅ S ₃	243.56	35.50	345.36	24.11	15.50	33.75	1.57	14.18
Kamadod	V ₂₆ S ₁	375.52	61.58	295.68	27.20	16.80	16.12	4.23	8.22
	V ₂₆ S ₂	266.44	51.75	282.24	24.35	14.60	20.00	5.87	14.29
	V ₂₆ S ₃	383.63	38.01	255.36	22.45	15.60	26.75	4.11	9.57
Karur	V ₂₇ S ₁	353.25	33.43	251.92	34.20	14.60	27.37	5.00	10.13
	V ₂₇ S ₂	325.65	43.05	239.23	23.24	12.80	17.00	5.97	12.96
	V ₂₇ S ₃	367.22	36.18	232.24	32.45	12.80	32.00	4.33	9.48



Village Name	Sample No.	Primary nutrients			Secondary nutrients			Ex-Na ⁺ cmol(p+) kg ⁻¹	ESP
		kg ha ⁻¹			cmol(p+) kg ⁻¹		kg ha ⁻¹		
		N	P ₂ O ₅	K ₂ O	Ex-Ca ²⁺	Ex-Mg ²⁺	SO ₄ ²⁻		
Konanatambigi	V ₂₈ S ₁	344.41	67.33	316.00	26.60	14.40	34.87	2.19	10.10
	V ₂₈ S ₂	178.34	33.21	322.56	33.22	13.50	21.25	5.95	9.27
	V ₂₈ S ₃	333.81	55.19	255.36	23.24	14.10	34.00	2.66	11.96
Kudrihal	V ₂₉ S ₁	421.00	31.60	214.44	25.80	13.80	32.87	6.35	6.73
	V ₂₉ S ₂	412.22	55.42	254.01	22.34	14.20	16.87	2.48	11.05
	V ₂₉ S ₃	316.23	41.45	208.32	24.24	13.10	27.37	2.00	10.97
Kunabeve	V ₃₀ S ₁	209.56	33.89	236.11	29.00	14.80	16.87	5.65	12.56
	V ₃₀ S ₂	341.52	67.78	263.42	26.34	13.60	32.25	1.75	5.52
	V ₃₀ S ₃	263.42	32.52	262.08	23.77	14.20	24.75	1.55	12.98
Maidur	V ₃₁ S ₁	334.81	33.89	313.69	27.60	15.80	26.00	6.06	17.98
	V ₃₁ S ₂	365.20	37.79	237.88	30.33	14.50	29.50	3.73	12.54
	V ₃₁ S ₃	372.43	42.37	244.44	34.35	13.50	16.12	4.89	9.27
Medleri	V ₃₂ S ₁	226.44	36.18	362.24	35.20	15.80	28.00	4.85	3.95
	V ₃₂ S ₂	345.22	38.24	255.36	24.35	16.70	29.75	3.32	6.79
	V ₃₂ S ₃	305.41	56.33	241.92	25.32	14.60	36.00	6.47	4.78
Nadiharalalli	V ₃₃ S ₁	246.24	58.17	239.23	32.80	15.40	27.37	7.79	14.25
	V ₃₃ S ₂	354.86	37.56	282.24	27.60	15.40	25.62	4.71	12.63
	V ₃₃ S ₃	427.05	32.98	336.00	34.33	14.40	19.00	5.54	11.87
Nalawagala	V ₃₄ S ₁	241.04	58.85	222.56	25.32	15.70	7.25	1.99	9.23
	V ₃₄ S ₂	416.23	40.30	255.36	22.34	14.60	28.12	4.12	10.20
	V ₃₄ S ₃	336.24	65.49	254.44	26.78	11.60	17.00	4.20	4.32
Nukapur	V ₃₅ S ₁	285.55	38.01	264.01	22.00	13.60	19.62	5.43	4.18
	V ₃₅ S ₂	344.52	43.51	238.32	23.20	12.00	31.62	3.37	6.72
	V ₃₅ S ₃	267.46	55.19	309.12	36.00	14.10	16.62	2.23	11.34

Contd...

Village Name	Sample No.	Primary nutrients			Secondary nutrients			Ex-Na ⁺ cmol(p+) kg ⁻¹	ESP
		kg ha ⁻¹			cmol(p+) kg ⁻¹		kg ha ⁻¹		
		N	P ₂ O ₅	K ₂ O	Ex-Ca ²⁺	Ex-Mg ²⁺	SO ₄ ²⁻		
Padmavathipur	V ₃₆ S ₁	364.85	40.76	372.56	25.00	15.80	27.00	2.58	9.66
	V ₃₆ S ₂	329.27	37.79	235.36	32.46	13.50	32.12	1.79	9.65
	V ₃₆ S ₃	363.40	44.88	295.68	22.00	15.60	34.75	3.19	12.31
Rahutanakatti	V ₃₇ S ₁	293.04	56.33	282.24	24.40	14.60	32.00	3.51	12.10
	V ₃₇ S ₂	362.24	51.53	265.36	34.34	15.50	24.37	3.40	11.59
	V ₃₇ S ₃	366.46	31.14	221.92	22.67	13.60	33.37	7.60	17.80
Ramapur	V ₃₈ S ₁	328.06	61.60	239.23	36.01	16.20	26.87	3.58	5.26
	V ₃₈ S ₂	453.24	51.30	292.24	33.25	13.40	17.37	1.74	7.83
	V ₃₈ S ₃	432.03	36.87	356.00	24.35	14.10	37.25	4.07	7.87
Ranebennur	V ₃₉ S ₁	212.23	32.52	322.56	39.20	11.20	22.00	3.34	5.64
	V ₃₉ S ₂	316.20	34.58	265.36	33.45	15.10	34.62	7.43	16.72
	V ₃₉ S ₃	334.44	34.81	234.44	24.35	12.20	33.25	3.31	12.63
Shidaganahal	V ₄₀ S ₁	290.43	45.34	257.01	22.20	14.80	19.59	1.91	9.85
	V ₄₀ S ₂	355.85	46.95	228.32	22.45	13.50	36.12	6.66	4.16
	V ₄₀ S ₃	422.06	65.72	236.11	27.49	14.70	28.00	2.40	4.46
Shrinivasapur	V ₄₁ S ₁	411.23	42.14	263.42	36.00	12.40	18.87	3.28	10.83
	V ₄₁ S ₂	315.23	32.75	262.08	24.39	13.30	33.37	2.85	4.30
	V ₄₁ S ₃	285.56	40.76	213.69	26.00	12.80	17.82	6.33	9.32



Village Name	Sample No.	Primary nutrients			Secondary nutrients			Ex-Na ⁺ cmol(p+) kg ⁻¹	ESP
		kg ha ⁻¹			cmol(p+) kg ⁻¹		kg ha ⁻¹		
		N	P ₂ O ₅	K ₂ O	Ex-Ca ²⁺	Ex-Mg ²⁺	SO ₄ ²⁻		
Somlapur	V ₄₂ S ₁	315.23	52.21	257.88	32.40	12.80	34.87	1.82	6.58
	V ₄₂ S ₂	317.40	49.24	220.44	33.24	13.50	33.12	6.26	8.11
	V ₄₂ S ₃	295.64	35.72	282.24	27.34	15.60	16.97	5.17	9.18
Udagatti	V ₄₃ S ₁	314.83	53.13	254.36	21.80	16.20	27.37	3.13	14.54
	V ₄₃ S ₂	421.44	60.57	231.92	37.20	16.40	27.00	6.24	10.61
	V ₄₃ S ₃	418.24	37.33	219.23	24.35	14.30	29.00	4.63	13.76
Venkatapur	V ₄₄ S ₁	314.25	30.69	282.24	31.00	14.40	27.25	6.55	8.14
	V ₄₄ S ₂	215.56	37.10	346.00	32.45	13.20	27.87	3.01	5.16
	V ₄₄ S ₃	191.14	32.75	362.56	27.49	14.30	36.87	5.78	11.76
Waderayanahalli	V ₄₅ S ₁	310.23	42.59	215.36	26.00	9.60	19.99	2.73	11.00
	V ₄₅ S ₂	332.43	58.40	274.44	26.00	15.50	31.75	5.58	5.55
	V ₄₅ S ₃	194.74	30.23	254.01	22.40	9.20	26.75	4.20	11.39
Yakalapur	V ₄₆ S ₁	354.84	49.92	238.32	32.6	10.80	26.75	3.48	5.94
	V ₄₆ S ₂	331.05	31.83	379.12	22.00	11.90	31.75	6.39	13.06
	V ₄₆ S ₃	421.23	39.85	332.56	23.20	11.40	15.25	3.72	4.77
Yallapur T medleri	V ₄₇ S ₁	343.26	30.00	257.36	36.00	13.10	34.62	2.92	5.55
	V ₄₇ S ₂	280.33	51.53	294.68	32.45	12.50	24.87	6.44	9.32
	V ₄₇ S ₃	367.52	35.72	283.24	27.49	13.60	33.37	5.87	13.78
Yattinahalli	V ₄₈ S ₁	263.43	34.35	258.36	35.00	15.00	17.95	5.43	8.95
	V ₄₈ S ₂	362.64	60.69	242.92	25.00	16.50	18.72	3.84	5.78
	V ₄₈ S ₃	323.23	44.43	239.23	32.46	13.40	25.75	1.75	6.94
Yellapur T honnatti	V ₄₉ S ₁	357.66	32.52	282.24	27.20	15.20	30.62	2.99	12.55
	V ₄₉ S ₂	379.25	40.08	326.00	36.00	14.50	33.12	7.73	15.93
	V ₄₉ S ₃	303.40	54.73	352.56	35.00	13.90	26.12	5.63	10.87
Yennihosahali	V ₅₀ S ₁	294.74	49.92	225.36	24.20	14.80	30.75	5.75	13.85
	V ₅₀ S ₂	352.84	31.83	227.44	35.20	13.90	26.75	4.46	6.41
	V ₅₀ S ₃	410.44	28.63	252.01	24.35	13.50	27.37	3.44	11.89
Minimum		178.34	23.13	208.32	14.50	9.20	7.25	1.55	3.33
Maximum		462.24	68.01	395.68	39.20	16.90	37.25	7.82	18.06
Mean		318.51	43.33	277.60	26.93	14.02	26.61	4.25	10.27
S.D		65.97	11.61	45.26	5.33	1.82	6.33	1.71	3.71
C.V		20.71	26.79	16.30	19.82	13.01	23.79	40.38	36.17

**ANNEXURE:**

Concentration of anions and cations of groundwater samples collected from Northern parts of Ranebennur taluk

Village	Sam ple No.	Cations (mmol L ⁻¹)				Anions (mmol L ⁻¹)				mg L ⁻¹	
		Na ⁺	K ⁺	Ca ²⁺	Mg ²⁺	CO ₃ ⁻²	HCO ⁻³	Cl ⁻¹	SO ₄ ²⁻	NO ₃ ⁻	B
Airani	V ₁ S ₁	18.34	0.064	3.60	1.80	0.20	6.02	15.34	4.89	7.35	0.26
	V ₁ S ₂	25.09	0.025	6.20	3.00	0.80	9.40	21.01	2.52	14.32	0.45
	V ₁ S ₃	33.18	0.043	7.50	3.40	0.20	7.60	31.20	3.40	16.36	0.69
Ankasapur	V ₂ S ₁	18.34	0.071	12.20	5.45	0.40	8.40	14.60	3.70	11.30	0.35
	V ₂ S ₂	22.06	0.023	6.10	2.40	0.30	11.00	16.00	5.20	5.72	0.11
	V ₂ S ₃	31.23	0.045	5.20	3.20	0.80	7.20	22.00	3.50	15.25	0.35
Aremallapur	V ₃ S ₁	23.91	0.064	6.60	3.10	0.60	8.30	19.00	3.66	6.06	0.60
	V ₃ S ₂	22.48	0.064	4.20	2.00	0.45	7.40	23.00	3.20	12.25	0.30
	V ₃ S ₃	26.77	0.054	7.90	3.89	0.40	7.40	29.20	3.50	10.11	1.10
Belur	V ₄ S ₁	25.23	0.013	4.80	2.80	0.10	6.45	32.45	4.84	10.23	0.44
	V ₄ S ₂	20.83	0.064	7.23	3.40	0.20	3.60	23.00	4.60	17.36	0.86
	V ₄ S ₃	23.38	0.012	5.60	2.32	0.30	9.00	16.45	5.50	12.32	0.52
Bevinahalli	V ₅ S ₁	18.43	0.038	5.80	2.77	0.10	6.30	16.00	5.16	19.39	0.56
	V ₅ S ₂	15.67	0.021	4.40	2.10	0.20	8.20	12.45	3.20	17.35	0.27
	V ₅ S ₃	22.06	0.012	3.10	1.67	0.80	7.20	14.32	5.40	12.36	0.96
Chalageri	V ₆ S ₁	29.34	0.066	7.80	3.99	0.60	7.20	25.00	6.61	6.30	0.56
	V ₆ S ₂	30.48	0.064	11.40	5.50	0.90	5.80	35.20	4.30	12.00	0.31
	V ₆ S ₃	24.56	0.025	7.40	3.14	0.23	6.20	22.00	6.50	11.24	0.59
Channapur	V ₇ S ₁	15.46	0.041	7.90	3.19	0.40	9.60	9.34	3.77	4.66	0.35
	V ₇ S ₂	26.13	0.062	3.34	1.42	0.80	10.60	15.60	5.50	4.39	0.15
	V ₇ S ₃	21.83	0.054	5.20	2.70	0.20	7.60	18.56	6.20	19.19	0.55
Chikka Aralahalli	V ₈ S ₁	27.05	0.087	9.00	4.20	0.80	9.33	20.13	7.56	2.12	0.63
	V ₈ S ₂	14.67	0.084	5.00	2.10	0.30	8.00	8.79	4.32	8.80	0.76
	V ₈ S ₃	30.46	0.089	6.40	3.60	0.50	7.80	30.34	4.20	4.89	0.69
Chikka Kuravatti	V ₉ S ₁	23.56	0.014	2.80	1.60	0.40	8.56	15.46	3.39	4.61	1.36
	V ₉ S ₂	23.78	0.094	3.60	2.40	0.56	7.56	14.67	6.02	8.08	1.25
	V ₉ S ₃	22.79	0.065	1.40	0.78	0.45	9.00	17.45	2.50	4.30	0.60
Devagondana katti	V ₁₀ S ₁	29.34	0.160	6.00	3.40	0.60	9.80	16.00	5.59	7.12	0.59
	V ₁₀ S ₂	30.69	0.250	3.10	1.50	0.40	6.65	21.45	6.60	12.75	0.57
	V ₁₀ S ₃	32.02	0.064	4.10	2.09	0.30	4.80	26.00	3.20	19.89	0.19

Village	Sample No.	Cations (mmol L ⁻¹)				Anions (mmol L ⁻¹)				mg L ⁻¹	
		Na ⁺	K ⁺	Ca ²⁺	Mg ²⁺	CO ₃ ⁻²	HCO ⁻³	Cl ⁻¹	SO ₄ ²⁻	NO ₃ ⁻	B
Chouda yyadan apur	V ₁₁ S ₁	14.56	0.043	6.10	2.40	2.10	9.00	10.60	2.96	21.53	0.37
	V ₁₁ S ₂	32.45	0.069	4.34	2.10	0.30	6.40	26.44	5.20	6.26	0.77
	V ₁₁ S ₃	31.25	0.054	4.70	2.20	1.20	8.34	20.34	7.20	13.76	0.82
Gangap ur	V ₁₂ S ₁	37.91	0.058	3.20	1.70	0.80	4.80	28.40	2.44	14.44	0.10
	V ₁₂ S ₂	29.91	0.041	4.20	2.45	0.20	7.60	23.60	4.50	15.52	1.50
	V ₁₂ S ₃	21.43	0.087	5.20	2.30	1.10	3.40	14.56	5.60	5.62	1.70
Gudag ur	V ₁₃ S ₁	29.91	0.089	4.32	2.80	0.20	7.60	20.60	7.00	10.52	0.78
	V ₁₃ S ₂	26.57	0.056	4.35	3.70	0.23	5.20	18.34	8.60	9.16	0.08
	V ₁₃ S ₃	27.78	0.054	3.10	1.80	0.20	6.45	23.45	3.40	16.05	0.59
Gudda danveri	V ₁₄ S ₁	36.95	0.071	10.00	4.67	0.60	9.40	33.46	9.88	8.99	1.65
	V ₁₄ S ₂	29.51	0.065	6.78	3.00	1.20	3.40	31.24	3.50	9.58	2.33
	V ₁₄ S ₃	27.91	0.085	4.20	1.98	0.45	4.80	18.46	7.50	15.25	1.10
Gudda guddap ur	V ₁₅ S ₁	35.86	0.087	4.60	2.40	0.40	7.20	28.64	5.38	19.06	0.39
	V ₁₅ S ₂	37.23	0.075	3.78	2.40	1.30	3.60	30.72	7.50	14.96	0.65
	V ₁₅ S ₃	25.46	0.054	2.45	1.78	0.40	2.20	20.46	4.60	6.60	0.14
Hanum apur	V ₁₆ S ₁	43.47	0.020	7.89	5.46	0.34	8.90	33.45	8.32	19.95	0.79
	V ₁₆ S ₂	30.25	0.045	4.30	2.13	0.34	8.67	21.64	1.60	12.20	0.85
	V ₁₆ S ₃	23.77	0.065	8.45	3.40	0.40	7.00	24.46	6.00	21.02	0.69
Harang iri	V ₁₇ S ₁	30.43	0.035	3.00	1.56	0.80	3.10	13.72	8.00	5.06	1.32
	V ₁₇ S ₂	26.16	0.051	5.45	3.50	0.60	8.40	18.45	6.50	16.25	1.56
	V ₁₇ S ₃	22.88	0.064	5.67	3.90	1.30	4.40	16.57	3.40	5.62	1.67
Heelad ahalli	V ₁₈ S ₁	28.26	0.041	4.56	3.25	0.60	7.80	18.00	7.63	14.20	0.19
	V ₁₈ S ₂	31.85	0.055	5.40	2.30	0.80	4.67	21.45	7.50	13.22	0.60
	V ₁₈ S ₃	22.45	0.064	3.20	1.90	1.20	8.60	15.46	3.20	10.93	0.50
Hirebid ari	V ₁₉ S ₁	34.78	0.069	7.20	2.40	1.00	6.80	30.56	3.29	9.33	0.12
	V ₁₉ S ₂	28.18	0.032	4.67	2.47	0.56	7.34	14.64	4.60	22.03	0.42
	V ₁₉ S ₃	26.02	0.054	5.67	2.80	0.40	2.00	24.67	5.60	14.20	0.23
Honnat ti	V ₂₀ S ₁	32.6	0.035	2.00	1.60	0.60	9.20	22.45	5.16	22.33	0.09
	V ₂₀ S ₂	26.56	0.065	6.45	3.45	0.45	5.60	24.64	3.20	19.22	0.24
	V ₂₀ S ₃	30.12	0.065	3.80	2.30	0.90	3.67	24.56	5.60	12.33	0.34
Hullika tti	V ₂₁ S ₁	30.43	0.069	9.20	3.50	1.20	6.80	27.60	7.04	5.30	0.32
	V ₂₁ S ₂	27.14	0.095	2.00	1.40	0.80	5.20	18.45	3.50	11.25	0.40
	V ₂₁ S ₃	22.78	0.055	3.51	2.60	1.13	6.60	14.56	6.98	19.99	0.56

Village	Sample No.	Cations (mmol L ⁻¹)				Anions (mmol L ⁻¹)				mg L ⁻¹	
		Na ⁺	K ⁺	Ca ²⁺	Mg ²⁺	CO ₃ ⁻²	HCO ⁻³	Cl ⁻¹	SO ₄ ²⁻	NO ₃ ⁻	B
Hullatti	V ₂₂ S ₁	31.59	0.074	7.20	2.20	1.00	9.40	28.98	4.60	7.80	0.23
	V ₂₂ S ₂	31.78	0.065	6.40	2.20	0.40	8.76	29.00	1.99	12.22	1.30
	V ₂₂ S ₃	28.61	0.065	5.00	2.60	0.80	3.80	23.20	3.50	12.33	0.65
Hunashi katti	V ₂₃ S ₁	32.9	0.069	9.20	4.00	0.20	12.20	27.78	8.05	8.34	1.20
	V ₂₃ S ₂	18.98	0.076	3.56	1.24	0.20	4.32	14.00	3.56	14.22	0.59
	V ₂₃ S ₃	28.98	0.042	3.90	2.10	0.43	8.40	15.89	4.30	21.29	1.20
Kajjari	V ₂₄ S ₁	33.69	0.011	5.57	3.20	2.00	9.10	29.56	4.67	20.60	2.35
	V ₂₄ S ₂	28.08	0.074	5.76	3.56	0.40	9.40	24.00	3.30	16.39	1.20
	V ₂₄ S ₃	32.7	0.065	4.40	2.56	0.89	7.00	26.98	5.20	6.03	0.13
Kakol	V ₂₅ S ₁	18.98	0.018	5.40	2.30	0.70	8.20	12.77	4.20	12.21	0.10
	V ₂₅ S ₂	15.78	0.065	5.70	3.50	0.45	7.60	14.00	3.20	18.58	0.45
	V ₂₅ S ₃	28.37	0.078	5.80	2.10	1.20	6.98	22.00	5.20	12.99	0.45
Kamado d	V ₂₆ S ₁	25	0.074	7.40	4.12	0.80	7.30	15.00	8.38	12.22	0.60
	V ₂₆ S ₂	26.89	0.075	2.20	1.30	0.90	2.40	15.00	6.20	14.83	0.20
	V ₂₆ S ₃	29.34	0.065	2.44	1.50	0.20	8.20	21.00	4.63	14.30	0.52
Karur	V ₂₇ S ₁	25.78	0.079	7.56	2.56	0.40	8.40	8.00	12.6 1	13.88	0.37
	V ₂₇ S ₂	27.89	0.065	2.23	1.80	1.20	7.00	18.00	6.50	23.37	0.42

Village	Sample No.	Cations (mmol L ⁻¹)				Anions (mmol L ⁻¹)				mg L ⁻¹	
		Na ⁺	K ⁺	Ca ²⁺	Mg ²⁺	CO ₃ ⁻²	HCO ⁻³	Cl ⁻¹	SO ₄ ²⁻	NO ₃ ⁻	B
Konanat ambigi	V ₂₇ S ₃	27.48	0.075	5.67	2.40	0.19	2.00	26.00	4.60	10.53	0.22
	V ₂₈ S ₁	19.54	0.012	4.70	3.30	1.20	9.80	15.00	3.56	4.36	0.55
	V ₂₈ S ₂	23.85	0.056	2.50	1.30	0.60	4.60	21.67	4.67	4.33	0.13
Kudrihal	V ₂₈ S ₃	39.95	0.045	3.40	2.10	0.40	4.00	32.80	4.30	8.64	0.44
	V ₂₉ S ₁	25.78	0.015	2.10	1.20	0.80	6.80	18.00	2.11	2.42	0.54
	V ₂₉ S ₂	38.19	0.064	3.90	2.34	0.40	5.40	30.11	6.30	6.39	0.30
Kunabev	V ₂₉ S ₃	20.05	0.085	4.11	3.10	0.90	5.00	16.00	5.30	3.03	0.20
	V ₃₀ S ₁	34.04	0.046	3.00	1.80	0.80	6.78	21.11	8.96	25.39	0.35
	V ₃₀ S ₂	14.89	0.024	3.87	2.68	1.20	4.76	13.87	3.21	13.37	0.26
Maidur	V ₃₀ S ₃	25.98	0.055	4.20	2.90	0.20	8.60	16.78	3.20	15.00	0.05
	V ₃₁ S ₁	28.98	0.033	4.20	1.43	0.20	9.60	19.00	4.20	16.36	0.56
	V ₃₁ S ₂	16.76	0.064	1.98	0.90	0.80	5.00	12.12	2.30	16.92	0.47
Medleri	V ₃₁ S ₃	24.67	0.054	6.70	3.00	0.80	8.20	20.60	5.30	24.36	0.44
	V ₃₂ S ₁	21.73	0.082	6.00	2.12	1.10	6.80	17.89	5.87	12.30	0.66
	V ₃₂ S ₂	23.85	0.064	4.10	2.40	1.20	7.00	19.89	3.20	26.54	0.73
	V ₃₂ S ₃	10.12	0.012	4.01	2.00	0.30	5.21	10.54	2.30	15.53	0.44

Village	Sample No.	Cations (mmol L ⁻¹)				Anions (mmol L ⁻¹)				mg L ⁻¹	
		Na ⁺	K ⁺	Ca ²⁺	Mg ²⁺	CO ₃ ⁻²	HCO ⁻³	Cl ⁻¹	SO ₄ ²⁻	NO ₃ ⁻	B
Nadiharalalli	V ₃₃ S ₁	22.09	0.035	3.20	2.13	0.40	4.30	16.40	5.43	22.30	0.55
	V ₃₃ S ₂	30.14	0.021	3.90	1.30	0.20	6.00	22.00	5.30	5.96	0.87
	V ₃₃ S ₃	11.56	0.012	4.80	2.01	0.30	4.00	12.00	2.23	5.32	0.73
Nalawagala	V ₃₄ S ₁	29.95	0.046	2.12	1.30	0.60	9.02	14.00	5.64	16.36	0.50
	V ₃₄ S ₂	20.98	0.064	3.70	2.40	0.10	4.80	16.50	5.30	12.35	0.46
	V ₃₄ S ₃	10.82	0.025	7.30	3.10	0.20	3.67	12.00	4.30	11.36	0.32
Nukapur	V ₃₅ S ₁	33.95	0.066	6.11	2.90	0.60	9.78	22.00	8.27	16.36	0.35
	V ₃₅ S ₂	23.78	0.054	4.67	3.00	0.65	5.80	14.78	6.20	10.04	0.45
	V ₃₅ S ₃	32.05	0.069	5.30	2.80	1.20	6.87	26.87	5.30	25.65	0.70
Padmavathipur	V ₃₆ S ₁	28.26	0.033	5.80	3.20	1.09	8.10	19.67	4.20	21.36	0.55
	V ₃₆ S ₂	12.98	0.058	4.50	3.30	0.40	0.80	15.87	6.30	13.31	0.33
	V ₃₆ S ₃	27.98	0.024	3.89	2.20	1.20	7.20	22.65	4.20	20.21	0.37
Rahutanakatti	V ₃₇ S ₁	27.17	0.043	4.67	3.40	0.60	5.60	21.02	4.36	9.31	0.23
	V ₃₇ S ₂	26.78	0.098	4.80	2.00	0.60	6.40	22.45	2.30	11.34	0.29
	V ₃₇ S ₃	33.87	0.056	7.80	3.10	0.89	8.80	27.21	6.20	20.32	0.37
Ramapur	V ₃₈ S ₁	32.6	0.048	2.80	1.20	0.20	5.60	30.00	9.82	19.34	0.65
	V ₃₈ S ₂	24.88	0.045	5.50	2.13	0.50	6.20	17.80	5.30	23.31	0.33
	V ₃₈ S ₃	32.07	0.065	4.60	2.00	0.90	2.43	22.00	3.70	19.00	0.57
Ranebenur	V ₃₉ S ₁	44.70	0.084	13.45	6.90	0.88	8.78	38.00	9.34	12.89	0.47
	V ₃₉ S ₂	33.81	0.065	5.97	5.97	0.78	7.98	26.02	6.30	6.98	0.34
	V ₃₉ S ₃	37.07	0.075	6.70	3.10	0.20	9.20	34.40	2.30	20.45	0.27
Shidaganahal	V ₄₀ S ₁	28.76	0.053	5.67	2.80	0.40	9.43	20.02	3.39	13.24	0.34
	V ₄₀ S ₂	32.87	0.054	5.07	2.34	0.20	8.87	19.09	7.89	19.00	0.77
	V ₄₀ S ₃	22.89	0.046	6.00	3.09	0.21	6.20	18.89	5.60	22.89	0.87
Shrinivasapur	V ₄₁ S ₁	31.52	0.066	5.67	2.70	0.40	9.32	28.09	1.62	19.34	0.73
	V ₄₁ S ₂	17.89	0.070	4.54	2.12	0.76	6.92	11.09	3.01	8.64	0.55
	V ₄₁ S ₃	18.89	0.046	2.80	1.14	0.20	6.00	13.00	3.00	17.42	0.44
Somlapur	V ₄₂ S ₁	28.26	0.094	4.10	2.45	0.60	8.40	18.00	8.16	2.89	0.37
	V ₄₂ S ₂	23.87	0.043	2.06	1.09	0.80	8.02	15.09	3.20	3.45	0.33
	V ₄₂ S ₃	12.45	0.098	2.45	1.89	0.32	4.65	9.09	2.34	14.24	0.47

Village	Sample No.	Cations (mmol L ⁻¹)				Anions (mmol L ⁻¹)				mg L ⁻¹	
		Na ⁺	K ⁺	Ca ²⁺	Mg ²⁺	CO ₃ ⁻²	HCO ⁻³	Cl ⁻¹	SO ₄ ²⁻	NO ₃ ⁻	B
Udagatti	V ₄₃ S ₁	16.08	0.033	5.40	2.00	0.60	7.10	9.43	3.56	3.31	0.70
	V ₄₃ S ₂	27.65	0.063	2.06	0.90	0.20	5.20	16.40	5.45	3.36	0.55

Village	Sample No.	Cations (mmol L ⁻¹)				Anions (mmol L ⁻¹)				mg L ⁻¹	
		Na ⁺	K ⁺	Ca ²⁺	Mg ²⁺	CO ₃ ⁻²	HCO ₃ ⁻³	Cl ⁻¹	SO ₄ ²⁻	NO ₃ ⁻	B
Venkata pur	V ₄₃ S ₃	21.1	0.023	6.70	3.00	0.20	7.89	19.00	3.30	7.33	0.65
	V ₄₄ S ₁	25.98	0.018	3.50	2.40	0.12	8.10	16.00	5.00	19.00	1.40
	V ₄₄ S ₂	13.99	0.090	5.70	2.55	0.40	6.45	12.33	3.43	13.90	0.39
	V ₄₄ S ₃	19.93	0.075	3.23	2.34	0.20	7.20	11.00	5.68	15.53	1.26
Wadera yanahalli	V ₄₅ S ₁	26.00	0.059	4.67	3.23	0.60	9.20	13.45	9.13	22.30	0.65
	V ₄₅ S ₂	12.08	0.084	5.55	3.54	0.40	6.80	12.40	2.43	14.96	1.20
	V ₄₅ S ₃	12.78	0.125	3.90	2.12	1.20	8.20	9.00	3.00	15.32	0.13
Yakalapur	V ₄₆ S ₁	41.3	0.069	8.40	4.67	0.40	7.00	33.45	6.50	25.53	0.65
	V ₄₆ S ₂	22.45	0.038	4.56	2.66	0.50	5.80	16.50	3.43	22.30	0.65
	V ₄₆ S ₃	27.65	0.044	5.40	2.32	0.90	6.00	14.03	8.70	14.96	0.35
Yallapur T medleri	V ₄₇ S ₁	26.08	0.170	6.20	2.56	0.60	5.40	17.87	7.14	24.30	0.56
	V ₄₇ S ₂	26.78	0.040	4.00	1.89	0.20	5.65	21.34	6.39	9.34	0.49
	V ₄₇ S ₃	26.76	0.094	3.56	1.45	0.30	7.23	26.45	1.48	23.31	0.34
Yattinahalli	V ₄₈ S ₁	30.08	0.010	2.45	1.08	0.40	8.20	17.87	5.43	11.24	0.60
	V ₄₈ S ₂	28.78	0.364	3.50	2.00	0.40	8.10	15.00	5.20	9.34	0.50
	V ₄₈ S ₃	26.45	0.024	3.80	1.87	1.12	9.40	15.45	4.04	5.61	0.15
Yellapur Thonnatti	V ₄₉ S ₁	18.47	0.079	5.67	3.12	0.60	7.70	11.00	5.59	21.64	0.46
	V ₄₉ S ₂	15.67	0.069	3.50	2.14	0.50	4.97	10.23	2.23	10.54	0.23
	V ₄₉ S ₃	19.87	0.088	4.34	2.34	0.22	5.40	14.03	8.70	11.39	0.09
Yennihsahali	V ₅₀ S ₁	21.31	0.061	4.42	2.13	0.40	8.60	14.35	2.21	11.24	0.52
	V ₅₀ S ₂	19.32	0.064	2.70	1.12	0.20	5.18	16.50	3.43	9.34	0.16
	V ₅₀ S ₃	31.88	0.027	4.80	2.10	0.30	4.48	14.99	8.40	13.01	0.40
Minimum		10.12	0.010	1.40	0.78	0.10	0.80	8.00	1.48	2.12	0.05
Maximum		44.70	0.360	13.45	6.90	2.10	12.20	38.00	12.61	26.54	2.35
Mean		26.04	0.060	5.00	2.56	0.59	6.86	19.84	5.00	13.26	0.57
SD		6.73	0.030	2.02	1.00	0.37	2.05	6.56	2.03	6.04	0.40
C.V		25.87	64.630	40.46	38.97	62.24	29.93	33.08	40.57	45.53	70.32

IMPORTANCE OF YOGA AND PHYSICAL ACTIVITIES

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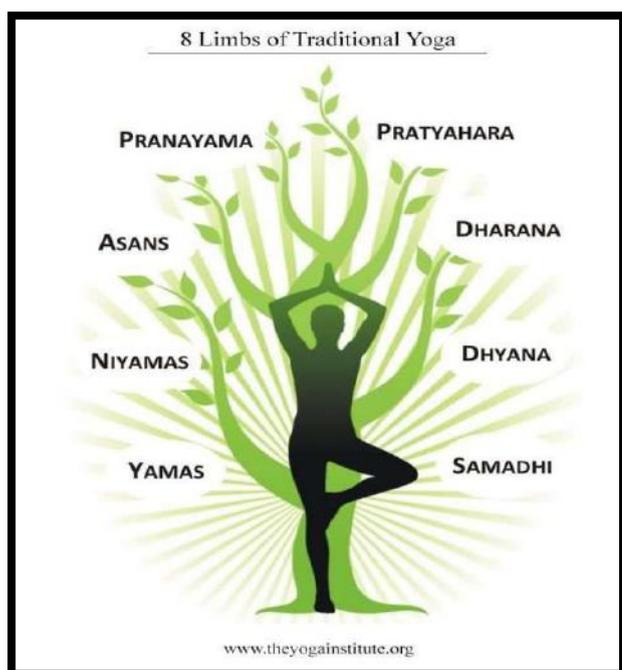
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Abstract: Yoga has been the subject of research in the past few decades for therapeutic purposes for modern epidemic diseases like mental stress, obesity, disease, hypertension, coronary heart disease and chronic obstructive pulmonary disease. Yoga should be considered a complementary therapy in the treatment of stress, anxiety, depression and other mood disorders as it has been shown to create a greater sense of well being, increases feelings of relaxation improve self-confidence and body image improve.

Key Words: Importance of Yoga.

INTRODUCTION:

Yoga is a science of right giving and as such, it is intended to be incorporated in daily life, it works on all aspects of the person, the physical, mental, emotional, social and Spiritual levels. The word yoga means “Unity or oneness” It is derived from the Sanskrit word “YUJ” which in spiritual terms mean the union of the individual consciousness with the universal consciousness. This may be taken as the union of body mind and soul and is used in the literature both as an end as well as means, as an end, yoga signifies integration of personality, at the highest level. As means yoga includes various practices and techniques which are employed to physical activities, the development of such integration, on a more practical level yoga is a means of balancing and harmonizing the body, mind and emotions and this state need to physical activities achieved before union with the higher reality takes place.



THE VARIOUS TYPES OF YOGIC PRACTICES:

- Yama and Niyama (Attitude Training Practices)



- Asana (steady Posture)
- Pranayama (Control of the Breathing Process)
- Mudras and Bandhas (Seal and lock for energy)
- Dhyana (Meditaiton)

Yama and Niyama (Attitude Training Practices);

Yama and Niyama are the fundamental practices of yoga. Without them, other Yogic practices fail to give desire to result. Yama and Niyama are self-imposed restriction to govern our behavior and thus develop a healthy attitude towards life. Objects and circumstance.

Asana (steady Posture):

The term Asana is derived from the Sanskrit term Asi-‘to be’ or ‘to sit’. Asana are certain special pattern of postures that stabilize the body and mind. Asana helps in the healthy functioning of the organism and also leads to suppleness and is ease of women.

Pranayama (Control of the Breathing Process):

The term pranayama is derived from two root words ‘prana’ which means vital energy or life forced and Ayama ‘ which means extension or expansion. It is useful in higher yogic practices like meditation.

Mudras and Bandhas (Seal and lock for energy):

mudras and banchias are certain specific looks and holds of (lie Semi-voluntary and involuntary muscles in the body. By bringing these muscles more and more under volition, one could there by influence the activity of the autonomous nervous system as a whole.

AIMS AND OBJECTIVES OF YOG :

- The aim of yoga is control over the mind.
- A man who cannot control his mind will find it difficult to attain divine communication but the self controlled man can attain it if he tries hard and directs his energy by the rights mind.
- To integrating the body ,mind and thoughts so as to work for good ends.
- The main aim and objectives of yoga mind and thought so as to work for good ends.
- The physical activities modern life style leads to diseases which are mostly due to poor food habits, heavy daily routines and to air and water pollution in turn easily affect the used to preserve are to destroy.
- At the same time it can also be used to torch a house like that our mind can also be used for either good or bad purposes many poets have compared our minds with a monkey, monkey would not sit at one place. It will jump here and there.
- Through systematic and regular yogic practices the body may be made healthier and its resistance power to fight against the diseases could be enhanced.
- The yogic practices are to make one free from diseases, ignorance, egoism miscarries the affiliations of old age, and fear of death etc.

IMPORTANCE OF YOGA:

- Yoga is one of the most powerful drugless system of treatment.
- Yoga has a special place and importance to refresh the mind and body and regain the lost or spent energy from spiritual point of view.
- Yoga does not require equipment and implements.
- Yoga can be adopted as lifestyle for promoting our physical and mental health.
- It is having its own concept of wellness which has been scientifically understood and presented by men.
- Yoga practices can be performed and practiced by everyone whether child or adult man or women young or old, rich or poor without reservation or without any difficult.
- Due to yoga, glands secretion becomes normal body organs get stronger and energetic .
- The systematic of yoga, naturopathy, ayurveda, unani, homeopathy and siddhas can be quoted among in digenous systems.
- Yoga helps in the growth and development if intelligence of a person. He develops and improves food habits and behavior. He tries for self improvement.
- Yoga makes the man and women self controlled. They do not indulge in extremes.
- It helps in achieving good mental as well as physical health.
- Yoga controls and regulates the respiration and respiratory systems as a whole.



- Yoga destroys the causes of diseases.
- The eye sight is improved considerably. If already weak it becomes better.
- Due to yogic exercises particularly pertaining to stomach, the stomach becomes clean digestion becomes regular and constipation is removed.

LITERATURE REVIEW:

Through the literature review the nine students found documentation of yoga's effectiveness in treating in treating musculoskeletal conditions, improving mental health, reducing stress and anxiety, increasing cloistral levels improving.

DISCUSSION AND ANALYSIS:

Yoga's incorporation of meditation and breathing can help improve a person's mental well-being. Regular yoga practice creates mental clarity and calmness, increases body a warmness, relieves chronic stress patterns relaxes the mind centers attention and sharpness concentration. An analysis of yoga and heart health studies found that yoga reduced risk factors for heart disease.

RESULTS: Yoga improves strength, balance and flexibility.

CONCLUSION:

The yogic and the meditative practices are the ones which originated in India and they have proved to be of immense importance for the overall well-being of any individual.

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A SPECIALLY DESIGNED PHYSICAL EDUCATION PROGRAMS

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Abstract: This paper will provide detail information of Adapted Physical Education, its purpose, its aims and objectives, its principles. The paper will summarise the approach of Adapted Physical Education and will show how it helps to the disabled person. How Adapted Physical Education program is deals with the art and science of developing, implementing, and carefully monitoring an instructional physical education program for learners with disabilities.

Key Words: Performance Analysis, Sports Performance.

INTRODUCTION:

Adapted Physical Education is a sub-discipline of physical education and encompasses the same components associated with physical education, providing safe, personally satisfying and successful experiences for students of varying abilities. Adapted physical education is an individualized program of instruction created for students with disabilities that enables success in physical education. In the context of Adapted Physical Education, "adapt" means "to adjust" or "to fit" modifications to meet the needs of students. Adaptive Physical Education is an adapted, or modified, physical education program designed to meet the individualized gross motor needs, or other disability-related challenges, of an identified student. Students with permanent or temporary mental, physical or emotional disabilities, who are unable to have all their educational needs met in a regular physical education class during the school day or to be adequately educated in the public schools, are identified as "children with disabilities." These students need special consideration in the planning and implementation of the physical education program being provided to them. If not, they will not be able to participate safely or successfully, thus not gain the physical, social, and psychological benefits that a quality physical education program can offer.

Goal of Adapted Physical Education:

The primary goal of adapted physical education should be to ensure that the child is provided with physical education services that meet his/her unique needs. A consideration, if the child needs an adapted program would be the safety of the student. Another consideration would be the development of the student's motor skills. Adapted physical education programs strive to ensure that each student actively participates in physical education programs at his or her own level and that the student is integrated into the regular education program whenever possible. Other goals might include assisting students to develop self-esteem, further socialization skills, and promote sportsmanship.

AIMS AND OBJECTIVES OF ADAPTIVE PHYSICAL EDUCATION:

Adapted Physical education is a program which deals with the art and science of developing, implementing, and carefully monitoring an instructional physical education program for learners with disabilities. The primary aims and objectives of the Adapted Physical education program are —

- To develop motor skills and to learn the benefits of regular physical activity.
- To learn and demonstrate appropriate social skills during physical activities.
- To let the child, participate regularly in movements that is age-appropriate to help develop the motor-skills.
- To learn new games and their rules and to demonstrate it correctly in the game settings.
- To develop a healthy level of balance, flexibility, muscular strength, body composition, and cardio_ respiratory endurance.

**PRINCIPLES OF ADAPTED PHYSICAL EDUCATION:**

Students with disabilities require adapted physical education activities to the limit of their capacity, to meet their physical, mental, social and emotional needs.

- Every effort should be made to ensure that the adapted physical education programme is according to the needs and capacities of students.
- The equipment, facilities, rules and instructions of an adapted physical education programme should be modified according to the need.
- The adapted physical education programme should be physically as well as psychologically sound. The teacher of physical education should note the anomalies, but should not try to treat the anomalies that need the attention of a medical specialist.
- The activities of adapted physical education should be decided after close coordination with medical staff.

THE BENEFITS OF ADAPTED PHYSICAL EDUCATION:

Adapted exercise can provide significant benefits for children in all of the developmental stages of life. It only makes sense, then, that regular participation in physical education classes would also promote positive advancements in students with special needs. Research has shown that physical education programs can do a great deal to improve the lifestyle of children with special needs; they can increase competency in gross motor skills, help to control obesity, improve self-esteem and social skills, encourage an active lifestyle, and maintain motivation in various areas of life. Here are all simply the natural benefits of exercise — a development of better motor skills and enhanced physical health that helps individuals to fight back against problems such as obesity, and the health complications that follow. Other benefits are Improvements in Confidence, Well-Being & physical health, hand-eye coordination & flexibility, muscle strength, endurance, and even cardiovascular efficiency, Behavioural Improvements in Attention, Relationships and Academics, cognitive improvements etc.

CONCLUSION:

Adapted Physical Education is the art and science of developing, implementing, and monitoring a carefully designed physical education instructional program for a learner with a disability, based on a comprehensive assessment, to give the learner the skills necessary for a lifetime of rich leisure, recreation, and sport experiences to enhance physical fitness and wellness.

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CHARACTERISTICS & COMPONENTS OF QUALITY PHYSICAL EDUCATION

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Abstract: A quality physical education program provides learning opportunities, appropriate instruction, meaningful and challenging content, and student and program assessment. Quality Physical Education utilises effective pedagogies, focuses on movement and its contribution to learning and the holistic development of individuals and their communities. In addition, a quality physical education improves mental alertness, academic performance, and readiness and enthusiasm for learning in our nation's youth. This paper will provide detail information of quality physical education, its Characteristics and its Components.

Key Words: Quality Physical Education, Sports.

INTRODUCTION:

A high quality physical education program offers children opportunities to develop the skills, concepts, and dispositions needed to be physically active for life. Sufficient, regular physical activity not only helps prevent major diseases but it also promotes learning, reduces stress, anxiety and depression, and improves overall wellness. It doesn't matter if the child excels in every other subject in school and grows up to become a successful doctor, lawyer or engineer, with poor health any professional achievement becomes secondary. There are many factors that contribute to the ease of implementing and sustaining a quality program, including the involvement of the administration, parents, and community. However, the bottom line is the willingness of the physical education teachers to do their best no matter the situation. REAL teachers do what they can with what they have. Our real Teacher's Pledge states this clearly and REAL teachers need our support and appreciation. Better yet, support them in the form of equipment, classroom assistance, and time and funding for professional development; and by advocating for quality physical education at the national level. Quality physical education is not a specific curriculum or program; it reflects, instead, an instructional philosophy that emphasizes:

- Providing intensive instruction in the motor and self-management skills needed to enjoy a wide variety of physical activity experiences, including competitive and non-competitive activities.
- Keeping all students active for most of the class period.
- Building students' confidence in their physical abilities.
- Influencing moral development by providing students with opportunities to assume leadership, cooperate with others, and accept responsibility for their own behavior. Having fun!

CHARACTERISTICS OF QUALITY PHYSICAL EDUCATION:

- Promotes physical activity outside of school.
- Teaches self-management skills, such as goal-setting and self-monitoring.
- Focuses, at the high school level, on helping adolescents make the transition to a physically active adult lifestyle.
- Actively teaches cooperation, fair play, and responsible participation in physical activity.
- Emphasizes knowledge and skills for a lifetime of physical activity.
- Is based on national standards that define what students should know and be able to do.
- Develops students self-confidence and eliminates practices that humiliate students (e.g., having team captains choose sides, dodge ball and other games of elimination).
- Assesses students on their progress in reaching goals, not on whether they achieve an absolute standard.



- Keeps students active for most of the class time.
- Provides many different physical activity choices.
- Meets needs of all students, especially those who are not athletically gifted.
- Features cooperative, as well as competitive, games.

According to NASPE, there are four components of a high-quality physical education program. Those are listed below with examples of what should be observed in each area.

- Opportunity to learn (provide a developmentally appropriate program)
- Meaningful Content (instruction in a variety of motor skills, fitness education, opportunity to improve social and cooperative skills, promotion of physical activity)
- Appropriate Instruction (maximum practice opportunities, full inclusion, out of school practice)
- Student and Program Assessment (assessment is ongoing, assessments align with state/national physical education standards)

CONCLUSION:

In physical education, the focus is on movement and its contribution to the development of individuals and communities. By learning in, through, and about movement, students gain an understanding that movement is integral to human expression and that it can contribute to people's pleasure and enhance their lives. They learn to understand, appreciate, and move their bodies, relate positively to others, and demonstrate constructive attitudes and values. This learning takes place as they engage in play, games, sport, exercise, recreation, adventure, and expressive movement in diverse physical and social environments. Physical education encourages students to engage in movement experiences that promote and support the development of physical and social skills. It fosters critical thinking and action and enables students to understand the role and significance of physical activity for individuals and society.

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THE WELLNESS IMPORTANCE FOR SUCCEEFUL LIFE

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Abstract: *Wellness, on the other hand, is the state of living a healthy lifestyle. Experts of wellness say that there are six different components of wellness. These six components should mix to create well-being of an individual. They are physical health, mental or emotional health, intellectual health, social health, environmental health and spiritual health. This paper will provide detail information of health, wellness and seven areas of health which make up wellness.*

Key Words: *health, wellness, areas of health.*

INTRODUCTION:

Why is wellness important? Wellness is important because if we want to function successfully in the world we need to be well. If we want to achieve goals, we need all seven areas of health to be well maintained because if anyone is diminished, the others suffer too. I've had it several times where my finances have been in disarray and that's affected my performance at work. I've come home from work and argued and had a beer instead of going to the gym and eating a healthy dinner. That cycle then perpetuates exponentially unless you get a grip of it. It's almost as if we have these seven glasses in front of us and if any one goes below a certain level, all the others begin to empty rapidly. If we know these we can monitor them and if anyone is dropping, put things in place to stop the slip. Each one of us is different but we should all know the triggers that cause the slip. So let's have a look at the seven areas of health which make up wellness.

PHYSICAL HEALTH:

Our body is the machine which moves us from A-B through life. If it fails early then so do we. Therefore, we want to keep it as well-oiled and serviced as possible. We also want to keep as injury-free as possible and the way we do that is through a comprehensive fitness program. I'm not talking about body building in the gym as that's not strictly in the bodies best interest although we should really include muscular strength and endurance training into our routines. Again, we don't all expect to be on the cover of fitness magazines so think about maintaining your body, not someone else's. Also, get outdoors for your fitness as much as possible as you'll then be aiding your mental and spiritual health too as nature is a proven remedy to depression.

MENTAL HEALTH:

The individual mostly appears normal until a trigger occurs and then everything changes. Even within PTSD there are a multitude of sub-styles. Some will have flash-backs and nightmares, others will be angry and paranoid, often there can be multiple symptoms at the same time. However, in my experience, mental health issues can be managed and reduced to minimal impact. The point being, you may be born with characteristics of mental health issues but you're not born with the full-blown illness. That is evidenced by the fact that it peaks and troughs even in the worst of cases. Therefore, we need to learn to manage the symptoms and that comes with first acknowledging and then seeking help.

NUTRITIONAL HEALTH:

How do you eat healthily? Well you consider the source of the food, how processed it is and how much of it you are eating. Again 3 Steps 2 Freedom covers nutrition in depth but ultimately, the body requires certain amounts of vitamins and minerals per day in order to function properly and it needs at least 2 litres of water a day to hydrate it. Is nutrition important to wellness? It allows you to perform optimally at your daily tasks. It gives you the energy, the clarity and the strength to achieve goals. If diminished, we become sluggish, we get snappy and we don't sleep properly.

**MEDICINAL HEALTH:**

This refers to both what happens when you get injured such as knowing basic first aid and also what you can do to prevent yourself getting ill in the first place. Many pharmaceuticals are over used but are necessary after injury whereas homeopathic remedies can be used as a prevention. It is really important to understand how you can keep yourself healthy.

SOCIAL HEALTH:

Humans are social creatures, we are tribal and require social stimulation in order to maintain wellness. Why are relationships important for wellness? That's because we need partnerships but we also need the right ones. We need to understand how past relationship and love traumas affect our overall wellness too as they do. So we need to understand where our past traumas have come from and deal with that, and then surround ourselves with the right social groupings in order to improve wellness.

FINANCIAL HEALTH:

Now we look at the additional areas of wellness, first being money and finance. Is wealth a wellness factor? Yes of course. Being in debt can have a huge impact on our wellness. Therefore, we need to create a firm financial foundation and then live with temperance when it comes to money. Don't overspend and that comes down to what we teach about the difference between needs and wants.

SPIRITUAL HEALTH:

Finally, we look at spiritual health. Is spirituality connected to wellness? Yes and that is because for thousands of years humanity has held strong spiritual beliefs and they have been connected to nature. However, we have become separated from nature in recent years and instead been gripped by consumerism and false idols. Do you think a rose ever gets a complex or a cow gets envy? No because they are in harmony. We can connect back to nature very easily and it can be as simple as sitting in a park under a tree. We don't have to join organised religion either, we can explore our own spirituality in order to gain wellness.

CONCLUSION:

The areas of wellness are all very interconnected and we need to pay attention to all because if one slips, the whole pack of cards comes crashing down. We must pay special attention to individual wellness and group wellness. Think about it, one of your team mates at work if suffering in some way and then under performs at work, that then affects your wellness and so on.

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An Empirical Study on Quality Related Issues and Challenges in Higher Education

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Abstract: *The issue of better quality in Higher Education has been a great concern for all who are directly or indirectly associated with the education and academic system. The reason is very obvious since the Higher Education could not keep required pace with the changes in technology, new trends of education system, occupational diversity, Global market trends and so on. Though the issue of quality in Higher Education is most talked about but it is equally true that this issue is least understood in its true spirit. In India, the graduates are assumed as products where their career prospects depend on the very quality of education they pursue. Quality education means quality of teachers, quality of learners, quality of courses, quality of planning and management, quality of infrastructure, quality of resource and quality of teaching and evaluation methods. Quality in education, at all the levels, is being encouraged in all the countries because of academic, social, political and economic advantages. If we want to succeed in the expansion of educational provision nationally and internationally, we have to improve and sustain the quality of our education system. To do this, it is quite requisite to identify and address challenges in quality education. These challenges are considerable to be addressed for the country as it is now engaged in the use of Higher Education as a powerful tool to build knowledge based information society of the 21st century. The quality education is not a onetime affair. It is a continuous process involving sustained efforts. This paper identifies and addresses challenges in quality Higher Education in India.*

Key Words: *Higher Education, Quality assurance, Opportunities and Challenges, Privatization*

INTRODUCTION:

India's Higher Education system is the world's third largest in terms of students, next to China and the United States. In future, India will be one of the largest education hubs. India's Higher Education sector has witnessed a tremendous increase in the number of Universities or University level Institutions and Colleges since independence. Rapid increase in the education level worldwide has caused a decline in qualified educational standards for countries. From the beginning of 2000's and until now, countries has increased their investments for Higher Education institutions. There are many Higher Education institutions which have advanced with these investments. Nevertheless, education problems in Higher Education institutions is increasing and understanding of quality education is decreasing. Today, Higher Education institutions initiate multiple studies and begin to take a different place in the developing countries within the decrease in quality standards. The fundamental problems facing in Higher Education in the country include inadequate infrastructure and facilities, large vacancies in faculty positions, low student enrolment rate, out dated teaching methods, declining research standards, unmotivated students, overcrowded classrooms and widespread geographic, ethnic and socio economic imbalances. There is a need for brining qualitative improvement in the sector of Higher Education in the country. The government must promote collaboration between national research laboratories and research centres of the top institutions for better quality and collaborative research. Higher Education plays a remarkable role in the progress of the society and development of the economy. Given the massive demand for Higher Education from all the strata of society, other pressures are causing concerning accessibility equity, quality and resources. The Higher Education system has to face a great variety of challenges due to rapid advancement. Therefore, rigorous training of individuals is required in the interdisciplinary field. Higher levels of discipline and other contextual expertise are necessary for college and university teaching as it is a scholarly activity that draws an extensive professional skills and practices.

**DESIGN OF THE STUDY:**

The present study is a Descriptive exploratory survey. It is descriptive in the sense that it is concerned with the analysis of the relationship with non-manipulative variables in a natural setting as the events already exist. It is a systematic empirical inquiry to draw inferences about determinants of quality and efficiency due to the privatization of Higher Education. It involves the description and interpretation of the conditions that exist. The study was carried out in Private and Government Universities and Institutes of Higher Education in India.

OBJECTIVES OF STUDY:

The present study was carried out with the following objectives:

- To assess of Quality aspect of the Institutions.
- To assess the research culture and promotion of research activities in Private and Government, Universities.

HIGHER EDUCATION IN INDIA:

After more than 75 years of independence, India's Higher Education system has still not been developed fully. It is evidenced by its poor performance in institutional rankings i.e. not a single Indian university in top 100 universities of the world, the poor employment status of its students, poor track record in receiving national awards and recognition, poor share in research funding and so on. Moreover, the status of state public universities that produce over 90% of the graduates in India is more dismal. According to the All India Survey on Higher Education (AISHE) report 2018-19, the Gross Enrolment Ratio in Higher education in India is only 26.3%, which is quite low as compared to the developed as well as, other developing countries. With the increase of enrollments at the school level, the supply of Higher Education institutes is insufficient to meet the growing demand in the country. Ensuring quality in Higher Education is amongst the foremost challenges being faced in India today. However, the Government is continuously focusing on quality education. Still, a large number of colleges and universities in India are unable to meet the minimum requirements laid down by the UGC and our universities are not in a position to mark their place among the top universities of the world. Increasing interference of politicians in the management of Higher Education jeopardies the autonomy of HEIs. Also, students organise campaigns, forget their own objectives and begin to develop their careers in politics. Management of Indian education faces challenges of over centralization, bureaucratic structures and lack of accountability, transparency, and professionalism. As a result of the increase in the number of affiliated colleges and students, the burden of administrative functions of universities has significantly increased and the core focus on academics and research is diluted. Central government HEIs are hardly ever short of funding and patronage has been ensured by the Central government and its arms, national level parties, industries and businesses and the national elite and the intelligentsia. This appears to be the key factor for the better performance of Central government HEIs. However, similar arrangements have never been built between the State universities and State governments, State level political parties and organizations, industry and businesses and the elite and the intelligentsia. This may be because, the aims, goals, methods and priorities of these institutions are pretty much the same as those of the Central institutions. The only real value adds that the State universities are doing for the State and its people seem to be that of enabling a few lakhs to become graduates every year. Higher Education in India has expanded very rapidly in the last seven decades after independence yet its accessibility and quality both remain a concern. If India wants economic gains and development to percolate at the grassroots level, it needs to invest in education on a priority basis.

Quality Concept of Higher Education in India:

Higher Education in India has played a vital role in lifting the country from poverty and underdevelopment after Independence. It has been crucial in providing social mobility in a patriarchal and hierarchical society on the one hand and economic growth and national development on the other. India gave due priority to enhancing the access to education on equitable basis immediately after Independence. Only recently its focus has shifted to quality in HEIs to make them more fitting for the market economy in the wake of globalisation and technological innovations. India aspires to become a knowledge hub by equipping learners with the latest knowledge skills and competencies befitting the work environment at a more complex, highly uncertain and interdependent world. It requires inculcating not only the cardinal values of head and heart but also providing the proper base and right aptitude. It can be undoubtedly stated that, over the ages, the wealth or poverty of nations largely depends on the quality of Higher Education. Further, one can look forward to a lifetime of unprecedented economic fulfilment with a larger repertoire of skills and a greater capacity for learning. The education sector is a rapidly changing sector and this dynamic culture offers a challenge for the educational institutions to lead or to actually survive in this competitive environment. As the education sector, especially Higher Education, is a part of the overall service sector, this raises the need for a solid base to be developed



to reach for high quality service. With burgeoning growth of Higher Education sector in our country and the increasing competition at the National and International level, the need for improving the quality of education and employability of our graduates and postgraduates has acquired a new urgency. The major challenges in achieving excellence in Higher Education are many and difficult to achieve in comparison to other industries. Good quality means a predictable degree of uniformity and dependability with a quality standard suited to the customer. India has got huge achievement in the Higher Education and supplies huge number of Human resource not only in India but also in the global market. Large number of technicians from different technological institutions, Doctors, business managers, scientists and researchers are doing their business outside India with excellence that is the result of Indian Higher Education. But as cumulative results, the Quality of Indian Higher Education is still in very poor condition. The poor quality of Higher Education is a serious issue. It is the opinion of different stakeholders, academicians, office bearers, politicians and different policy makers that the quality of Higher Education could not keep the required pace of development with the changes in technology, new trends of education system, occupational diversity, global market trends and so on from time to time. The students who complete their UG and PG course have very low job opportunities. Another serious issue is the gap between demand and supply implying that the youths are not eligible for the job market. This leads to wide spread unemployment among the higher educated graduates. To improve the quality of Higher Education in India, we must maintain parameters of quality education. The parameters of quality Higher Education are, sufficient number of quality faculty members, profile of the students entering into the Higher Education, infrastructure of the educational institutions, curriculum, appropriate teaching method, examination pattern, learning resources, national agencies, government policies and institutional leadership etc. India has one of the largest education systems of the world. Therefore, different stakeholders must work on these parameters on their respective levels to maintain and improve the quality of Higher Education in India.

CHALLENGES TO QUALITY HIGHER EDUCATION IN INDIA:

Lack of Access and Equity: The lack of access and equity is the most serious challenge faced by Indian Higher Education. In some areas or town or states the access of Higher Education is absolutely fine for all the people. But in some areas where the even the Higher secondary schools or colleges are very scarce. There are some Districts with reasonable population and demand of Higher Education does not have even single universities. There is also disparity among different social caste and religious groups and regional disparities in the Higher Education. These challenges are needs to be addressed very soon.

Poor Government Budget: Low budget is a serious challenge in the field of education. Very meagre amount of fund is allocated for the education system. And the matter is that most of the allocated fund is spend in school education, very less amount is spend on Higher Education sector. The amount of scholarship is significantly low and Public expenditure on scholarships has been declining over the years. For education an extremely low percentage of graduates in India avail student loans. Sometimes the fellowship of research scholars are not transacted in the due time that leads to frustration among the scholars. Though some quantitative development is seen, but due to low budget quality of Higher Education is facing a serious challenge.

Gap between Demand and Supply: India has a huge growing young population. They demand education after finishing their higher secondary education. But it fails to meet the demand of the people. According to a study conducted by ASSOCHAM, 93 per cent MBA graduates are unemployable. It is because the availability is not up to the demand of industry. Another thing is that, due less job opportunity students continue their study after finishing their course of study. This leads to over demand of education in higher level.

Poor Infrastructure: Though India has tremendous development in the Higher Education, still there are large number of colleges, institution and universities where even the basic facilities are not available. Old classrooms are there, lack of sufficient building, staffrooms, library or resource rooms, laboratory, technological facilities, instruments for practical classes, toilets and urinates, drinking water facilities etc. are there. The poor infrastructure of institutions directly throwing challenges to the quality of Higher Education. This problem is found basically in rural areas.

Inadequate Number of Faculty members: Another serious challenge to the Higher Education is insufficient number of faculty members in the colleges and universities. Without the teachers the intended learning outcomes cannot be achieved. Even the single teachers have to teach number of different subjects to large number students along with other work load. Thus the student teacher ratio on the whole is at a lamentable state.

Improper Teaching Method: At the tertiary level there is no such formal training for the faculty members. Therefore, the unqualified or untrained faculty members are appointed. As they don't have knowledge of pedagogy and teaching techniques, their quality of teaching is very poor and the learning outcome is meagre.

Low Performance of the Teachers and Principals: In India, a large section of teacher community does not perform their duties well. The moment they have been appointed to the colleges, they thought that their learning is



complete. They just perform their daily basis duties to come to the colleges and make the attendance continue. Even in some colleges, teachers come in interval basis and perform their personal work. The principals of colleges remain absent and doing their own personal business. They do not take strict actions against the non-performing teachers as they themselves are engaged in forgery.

Lack of Available Resources: The quality of education is directly depending upon the learning process. The availability of learning resources is very less in Indian colleges. Most of the colleges have poor quality of library building. This leads to poor service of the library. Number of books are very less, no magazine, no journal that lead to the up gradation of new knowledge. There are also poor internet facilities to access the online database and resources.

Examination Ridden Curriculum: In India most of the universities have over loaded curriculum of theoretical knowledge. And this curriculum is only concerned with the passing of examination. Not only this, curriculum is not up to the mark in terms of market demand. Old and outdated curriculum is still being followed by most of the universities where due to globalization the demand of quality and skill is changing every day.

Poor Financial Condition of the students: It is major setback for Indian Higher Education that due to lack of financial support, many large numbers of students compel to drop their study. This is because, among Indians, even after the 75 years of Independence, the economic disparity is very high. While successive governments have declared financial aid for different weaker section but many more people still do not get this benefit. Due to financial problem students are not able to get admission in quality institutions, could not buy books and available technological accessibility.

Privatization: Due to the lack of public fund and degrading quality, privatization of higher education is developing in fast speed. Though it seems that privatization can improve the quality, but somehow it is found that in some areas of education it leads to very poor quality of education and management. This also leads to disparity in quality education. Education sector is being grabbed by education mafias who have huge money power.

Political Turmoil: Indian Higher Education is facing very bad political turmoil. Due to this, no stability is found in the education policies that can promote the quality education. Whenever the government change, different political parties frame new policies according to their vested interest. Therefore, with change of power, the educational policies also change that leads to overwork and frustration among the learners and different stake holders.

SUGGESTIONS TO MAINTAIN QUALITY HIGHER EDUCATION:

Promote Access and Equity: It is the most serious issues that need to be addressed as soon as possible. Regional, religious, financial and caste disparities have to be removed to give access and equity. Different welfare schemes for different groups have to be introduced to promote access and equity to all the groups involved in the teaching learning process.

Framing Realistic Financial Plan: The concerned governments in the central and the state need to frame realistic financial planning to achieve the target. Any mismatch with the budget and target of the policy makers will lead to the poor quality of education. Therefore, the government needs to allocate more funds.

Bridge the Gap between Demand and Supply: As there is huge demand of Higher Education among the growing young population, their demands need to be urgently supplied. Establishment of new institutions and increase the strength of the old institutions can solve this issue.

Infrastructural Development: To improve the quality infrastructural development is essential. The government must ensure proper physical access to these communities and emphasize on construction of Higher Education institutions in closer proximity to villages. All the accessibility must be ensured in the name of infrastructure to improve the quality of Higher Education.

Appointment of Sufficient and Quality Faculty Members: It is an alarming issue that needs to be urgently addressed. First of all a large number of teachers needs to be appointed either adhoc or guest basis or permanent basis. At least there must be one teacher for a particular subject. After that we need to focus on the quality of the teachers for the permanent basis. Strict rules and regulation must be followed, academic background, research and experience must be taken into consideration.

Training of Faculty Members at Tertiary Level: The faculty members of college and universities need to be trained in regular interval basis. Basically all the newly appointed members must be given different exposures for training with intensives. In service training every year has to be made obligatory for every serving teacher so as to update or refresh his existing knowledge and skills.

Vigilance and Supervision or Inspection: Vigilance or supervision is essential for all the public sectors, it may be in government offices or schools or colleges. Sudden visits or regular inspection surely improve the performance of the faculties in school or colleges. In this case strict actions must be taken if any irregularities are found. All the serving



teachers need to be made to take performance related tests regularly and their salary and perks should commensurate with the outcome of these tests.

Provision for Online Resources and Books: At the present time ICT facilities is an essential part of any institution. Therefore, use of computers and online access must be established in different institutions to avail the online learning resources. Seminars, workshops and conferences have to be organized in the relevant field of study and that should be the regular feature of on the job training regimen.

Job Oriented Curriculum: This is an urgent need to update the curriculum with the changing global scenario. In today's world, everything in the Higher Education affected by the globalization. Hence the curriculum must be frame according to the local as well as global perspectives.

Welfare Schemes and Scholarship: The government has to sanctions fund for different schemes and scholarship so that needy students can avail education. If it is possible then, they can also take part in the process of nation building.

Controlled and Monitored Privatization: Privatization to some extent has important contribution to the quality Higher Education. But the rate in which it is growing without quality concerns needs to be urgently monitored and controlled. The money oriented approach of the private institutions needs to be changed.

Strong Policies for Higher Education: The government have to frame stable and strong rules, regulation and policies. This will create stable mind set about Higher Education among different stakeholders of education.

CONCLUSION:

India is today one of the fastest developing countries of the world with the annual growth rate going above 9%. Still a large section of the population remains illiterate and a large number of children's do not get even primary education. This is not only excluded a large section of the population from contributing to the development of the country fully but it has also prevented them from utilising the benefits of whatever development have taken place for the benefit of the people. A developed nation is inevitably an educated nation. But all it requires is adequate resources. The Universities have the research potential and the industry can provide financial support to carry out researchers befitting their needs and requirements and bring about desirable changes in the system. In order to achieve this, we need good governance in the Higher Education system which would encourage optimisation of resources and infrastructure. Initiatives also need to be taken to take care of the human sides of enterprise in terms of good salary, parity and other world class benefits. Steps should be taken to have world class multidisciplinary institutions of research. Despite the increased access to Higher Education in India, challenges remain. The quality education is not a onetime affair. It is a continuous process involving sustained efforts.

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The Political condition of Siddi Tribal People of Uttar Kannada in Karnataka: Issues and Challenges

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Abstract: *The problem under research is examined and analyzed with reference to the various sub-structures Political, social, economic, religious, Juridical and educational of the Siddi tribal community specially Uttar Kannada district of Karnataka .This research paper intended to understand the Political condition of non-Indian origin Siddi tribal people of Uttar Kannada district in Karnataka as resulting from the racial and social evil forces occurring in Uttar Kannada district since independence. In Karnataka there are 31 districts in these Uttar Kannada is biggest district. In this district there are twelvetalukas , these are Karwar , Bhatkal , Sirsi , Yallapur ,Siddapur ,Mundgod , Hannover, Ankola, Kumata, Dandeliand Zoida, Uttar Kannada district surrounded by Western Ghats , in this Western Ghats region Siddi, Gouli, Kunabi, Vokkaliga Halaki and Gonda etc. tribal people are settled .In these tribes Siddis can be identified as distinct group totally different in features from the rest of the tribal people living in the area. These Siddis are found in various parts of India Specially Gujarat, Maharashtra, Andhra Pradesh and Karnataka. In this research paper the political and juridical condition of Siddi tribal people has been analyzed in terms of their awareness about the political rights and situation in the Karnataka,*

Key Words: *Higher Education, Quality assurance, Opportunities and Challenges, Privatization*

INTRODUCTION:

Life and condition of the migrated non-Indian origin Siddi tribal people:

In Karnataka Siddi tribal people are found mainly in the Western Ghats of the Uttar Kannada district and also in some parts of Belgaum and Dharwad district of Karnataka State. Most of the Siddis in Uttar Kannada district live in forested regions of Western Ghats. some of them live in towns nearby forest. these shidd is were brought from South Africa to Goa by imperialist states, most of them were brought as slaves, when torture of the Portuguese imperia list intolerable many of them escaped and migrated to thick forest of Uttar Kannada. Then they live in the forest unaware of the progress in the outside human society. Their Innocence and ignorance often leads to exploitation and violation of their political rights in particular political condition. In Karnataka Siddi tribal people are found mainly in the Western Ghats of the Uttar Kannada district. According to 2011 census the total Siddi tribes in Uttar Kannada district are 10477 out of which 5164 are male and 5313 are female. The Siddis are living either on the slopes of the Western Ghats which contain thick forest. The Siddis have their houses built on an elevation in the centre of their fields or on the edge of the forest. Today some villages include only Siddis families, for example Gardoli, Vada and Gadgera villages etc. The Siddi women and Men are involved in collection of forest product like fruits, herbs ,honey catching and they doing cultivation on the encroached forest land , and being constantly harassed by forest department official. Some tribal people go for different type work on daily wage basis in industries, building and road construction and Siddi women go for domestic works. Some decade back Hindu Siddis worked mainly in the fields of Havik Brahmins who act as their priests during marriage ceremonies and some other life-cycle rituals, totally they are very hard workers.

Siddi tribal people are very traditional illiterate and few decade back parents didn't wish to provide educational status, there was a wide spread feeling that the education has no practical utility for children in future life. This illiteracy leads to exploitation and unequal social and political status of Siddi people. We found that there are three religious groups in the Siddi community, Hindu, Muslim and Christian Siddi's. Apart from different religious practices, all the Siddis show some similarity in observing of life-cycle rituals. In their political and



social organization, there are special features distinct from those of other people in the same region. These Siddi tribal people were constantly exploited by rich Indian merchants as well as foreign and Indian rulers on the basis of race and feeling of non-Indian origin tribal people. Therefore, it is very urgent need to bring them main stream of the Indian society.

Statement of the problem:

The problem of research in the present paper is micro level impact of the government policies on socio-political development of Siddi in Uttar Kannada district of Karnataka. The government has spent crores of rupees for development of Siddi tribal community. But still Siddi tribal development remain as an enigma. Their socio-economic-political condition not better than primitive tribe. This research paper is attempt to examine the present actual political status of Siddi tribal people of Uttar Kannada and government policies and schemes implemented among this tribe. This study will provide valuable information's to policy makers and also administrators in their future pursuit for socio-political development of Siddi tribal community.

This research paper focus on following questions related to political condition of Siddi tribal community.

What are the various Siddi development policies and schemes formulated and actually implemented?

What is the Socio-political condition? Are they aware of their fundamental and political rights?

How we can bring them to main stream of the society?

Is tribal development department helpful to uplift of the Siddi tribal people.

How Indian origin people treated African origin these Siddi tribal people?

OBJECTIVES OF THE STUDY AREA:

- To study the present social, economic and especially political condition of Siddi tribal people,
- To analyse the present political status of Siddi's in the study area.
- To study the comparison of Indian origin & non-Indian origin Siddi tribal in the study area according to political status.
- To understand and find a solution to unequal political rights and condition.
- To study the urgent need to provide Political Rights and status amenities to the Siddi tribal.
- Analysis the causes responsible for violation of fundamental and political rights of target group
- To analyze impact of various government policies and schemes in the socio-political development of Siddis

METHODOLOGY:

The data for this research paper will collect from both primary and secondary sources. The primary source are participant observation, discussion with Siddi tribal people, political leaders, NGOs and social workers etc. Data collection from secondary source includes the official records of tribal development department, books, journals etc.

Analysis of political condition of Siddi tribal people:

Siddi children are unable to getting proper education and developmental caring as desired. Among the Siddi tribal the literacy rate is very low. They don't have any social life and suffering from human made violation. Mostly it becomes in hidden situation due to some socio-economic force but ultimately their political rights are being disturbed on the ground of equity and equality. Fundamental and political rights of the Siddi tribal people are frequently oppressed and violated, therefore they are losing their political rights. They are victims of vulnerability, The problem of the aboriginal Siddi tribal areas must be dealt with in terms of social, economic and political condition of the region. In India like other weaker section of the society African origin siddi tribal people are also exploited by dominated classes of Indian society. Even today they living in the thick forest unaware of the natural rights and progress in the outside society and they are treated as second grade citizens. the central and state government policy makers also have neglected subaltern siddi tribal people to bring them to the main stream of the society. This ignorance often leads to suppress their fundamental rights and leads to political, social and economic exploitation and violation of their political rights. Thus, this type of life condition of Siddi tribal people of Uttar Kannada of Karnataka also causes for discrimination and suppress the political rights of Siddi tribal people.

Main causes for violation of Fundamental Rights and Political Rights:

- Siddi tribal people are considered as non Indians and treated as second grade citizens in India
- 2, Lack of employment opportunities leads to unemployment among the Siddi tribal people and lower wages.
- Lack of proper education which also suppress their development.
 - Lack of fundamental facilities in their living areas.



- Social evils and Superstitions among the Siddi tribal community.
- Siddi tribal people depends on nature for their livelihood.
- Lack of proper implementation of labour law and protection assurance of their economic rights.
- Discrimination on ground of race and colour by Indian origin people leads to violation of their political and social rights specially right to equality and liberty.
- Effects of modernization and westernization on Siddi tribal community.
- Innocence, shy nature and lowers level of understanding leads to violation of political rights.
- Ignorance and unawareness of their constitutional rights and political rights.
- Lack of eminent leaders and unity among the Siddi Community.
- Only profit motives of NGO's those are working in the name of tribal people specially Sidditribal and misuse of their innocence.
- Lack of political opportunities and powers.
- Political parties and politicians of this area considered these Siddi's only as their vote bank and lack of will power to develop the siddi community.
- Lack of well-organized associations specially youth organizations for development of Siddi tribal and protect the interest and rights of the Siddi people.
- Forest laws also deprive their natural rights, even they are unable to plough their encroached forest land.
- Siddi women are sexually harassing at work place by the who provides work opportunity to them. It is because of helpless situation due to migration.
- Lack of attention of so called elites and intellectuals towards uplift and all-round development of Siddi people.

This type of condition made them difficult to protect their fundamental socio-political rights specially their precious political cultural.

Recommendations for Enhancement of the political condition of Siddi Tribal people:

- Provide proper free education up to university and establish separate residential schools, hostels and also provide scholarship facilities to Siddi children
- Prevent discrimination on the ground of their origin, race, religion, caste, creed, colour and religion.
- Remove prejudices against non-Indian origin Siddis and the Indians
- Formulate essential policies and programs for provide education, houses, drinking water facilities, electricity, hospitals, roads and employment opportunities to Siddi tribal people. And it is essential to Proper implementation of welfare policies of Siddis which are formulated by Central and State Government
- It is essential to increase percentages of Siddi's who exercised their franchise in general elections
- The Siddis are a minority in India. Therefore, they need a great help from the NGOs, Trusts, Universities, welfare agencies and by Government for their advancement.
- Efforts of empowerment of Siddi tribal people are not sufficient in number, so it is urgent need to Political, social, and economic empowerment and bring them to the mainstream of the Indian society with help of different selfless agencies.
- Aware the Siddi tribal people about their health and bad effects of child marriage, drugs etc
- Organize the legal awareness programs by Bar council, Universities and colleges nearby their areas.
- It is very urgent to regularize and title deeds of encroached forest lands for agriculture purpose by forest department and concern authority.
- Adopt of Siddi villages by NSS, NCC and representatives of the people
- Encourage Siddi people for political participation by establish the separate election booths in which areas their population is more
- Organize special literacy programmes for Siddi women like adult literacy programmes
- Appoint the special committee to study the give suggestions regarding how to bring them mainstream of the society
- Encourage to conduct more and more research on different aspect of Siddi community
- Create good condition for enjoyment of fundamental rights and all constitutional rights in their region

**CONCLUSION:**

In Karnataka specially Uttar Kannada district Siddi tribal people have remained isolated and socially, politically untouchables, till to day their life is not better than slaves. Efforts of empowerment of Siddi tribal people are not sufficient in number, Some NGO's, Rural welfare trusts, Karnataka State Tribal Research Institution, Karnataka tribal welfare Department and others are put efforts to bring Siddis to Mainstream of the society. Union and State governments policy makers and also administrators should give their attention towards issues and burning problems of Siddi people and it is essential to see the proper implementation of policies and programmes in their region. Then only we can realize the secular, republic and democratic ideals in India. It is also duty of Universities to carry out the study plans of the socio-economic-political condition and try to find out the solution for their burning problems and educational and research institutions plan to conduct discourses and national conference for prevent the discrimination between Indian origin and non-Indian origin Siddi people and help to policy makers for formulation of policies and programmes related to the development of Siddi tribal people. In the part of conclusion, the author would like to state that the political condition of Siddi tribal group in present era has required prompted legal reforms, new legislation,

SUMMARY:

In this present era, political, social and economic Rights are become violated concern with targeted Siddi tribal group in the study area. They are treated as second grade citizens and they become discriminated and exploited in various ways at working place. Thus they are far from main stream of development. they are unable to get what they deserve as human beings. In this search article the political status of Siddi tribal people has been analysed in terms of their awareness about political Condition in the country. Their participation in elections, their decision making on political issues and the impact of the political forces emanating from the nearby city. The Siddi tribal people do not show their awareness of political equality granted to them by the constitution, despite their being near to the city and visiting the city every day. They hardly know the political condition and if at all they know, that it is only about few political parties and leaders.

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TEACHER EDUCATION: THE IMPORTANCE OF SOFT SKILLS DEVELOPMENT

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Abstract: *Soft skills are character attributes that improve a person's relationships, work output, and career perspectives. Soft skills are thought to increase proficiency and, as a result, one's capacity to support social change and advancement. Regardless of their topic of study, all graduates need to develop soft skills. For lecturers to change up their teaching methods for the students, they must first have a solid knowledge of soft skills. Teaching will transform into being structured and operative with soft skills as it becomes a two-way activity. This topic is covered in this article, along with how teachers may help students develop their soft skills and examples of how to apply soft skills in higher education.*

Key Words: *soft skills, effective teaching, communication, higher education.*

INTRODUCTION:

People live in a society that is highly complicated. They deal with a variety of issues and difficulties on a daily basis. With the right personal abilities, these issues may be resolved and burdens removed. To get along with others, people should be kind and gentle. The traits that put the guy on the back foot include anger, disdain, rashness, selfishness, and avarice. These traits could prevent the development of the personality. A personality-less human could as well be an animal. Animals cannot compare to humans in knowledge or common sense. Only with other people's assistance do people achieve their goals. It would be beneficial for a person to seek out such collaboration, friendliness, adjustment, calm thinking, suppression of suffering, mutual support, etc. to help him develop his personality. These soft skills would help the individual enhance their creative thinking, understanding, and ability to make wise decisions. Making wise decisions helps a person achieve his objectives and change his behaviour. Making the right decisions will enable them to complete their jobs and reach the pinnacle of their lives with ease. Given that the perceived value of soft skills in society has greatly expanded over the past few decades. It is crucial for everyone to develop the necessary abilities outside of their academic or professional fields. It's not extremely challenging. There are several strategies to address a shortfall in a particular soft skill area once it has been detected in oneself. In terms of soft skills, educators have a specific duty since they have a significant influence on students' growth during their time in college and university. They also promote awareness of the value of soft skills and motivate people to enhance their abilities. The capacity of a nation to survive the difficulties of globalization, which are consistent with the information economy, depends heavily on the ability of its citizens to be highly intelligent and skilled. Thus, the growth of human capital is crucial and required since it propels the country toward its goals and missions. A nation will be weak if it lacks quality human capital since there won't be any human component capable of starting new projects and initiatives. A quality educational process produces a quality human capital. To generate such human capital, an effective education system must be thoroughly thought out and properly structured. In order to generate a human capital that is highly informed and skilled to satisfy the need and expectations of many people, institutions of higher learning therefore play a very significant role.

Soft Skills Definitions:

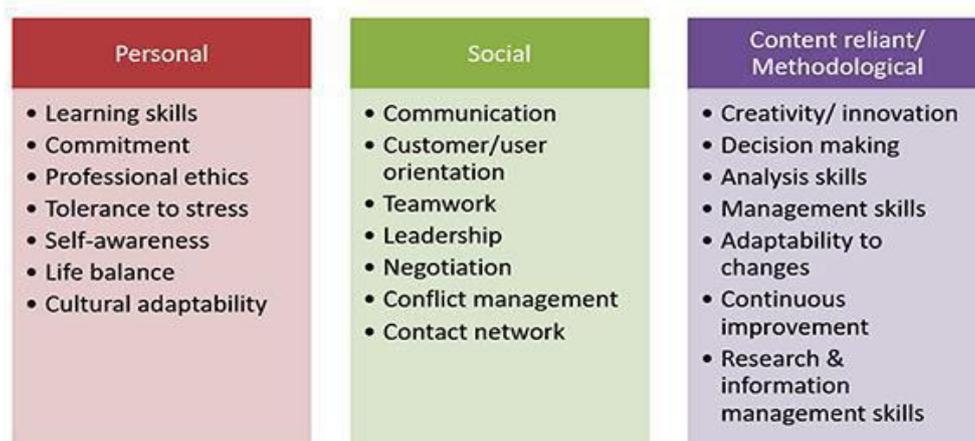
Personality characteristics and behaviors are considered soft skills. Specialized or "hard" skills are soft skills; nonetheless, soft skills are further about the behaviors you parade in colorful surrounds rather than the information you have. The term "soft skills" refers to interpersonal capacities that explain how you approach life, work, and connections with others. It's essential to people's success in the plant. They support the existent's success at work. In addition to hard gift, it's also appertained to as mortal skill and people skill. Interpersonal and mortal relation skills are what they are. It alludes to a group of character attributes including benevolence, sanguinity, verbal aptitude, and



social graces. The word "soft skills" is defined as "useful traits for some feathers of job that don't depend on acquired knowledge they include common sense, the capability to interact with people, and a positive adaptable station" in an English wordbook. The successful use of soft skills is needed in a classroom setting. Only in the presence and use of soft skills can tutoring- literacy, which is a process of commerce and interpretation, come meaningful and successful. The educator aids the pupils in acquiring the knowledge they need, as well as the skills, values, stations, and routines they'll need to survive in the world of hereafter. analogous to this, a pupil develops their personality in connection to the knowledgeable schoolteacher.

As the preceptors are the torchbearers in creating social cohesion, public integration and a literacy society, the sodalities of education should give formal professional training in soft skills to the prospective schoolteacher- scholars on a nonstop introductory. They're necessary to come a good schoolteacher as they feed to the development of one's personality and stropping of communication skills and commitment to a law of ethics.

TAXONOMY OF SOFT SKILLS



In discrepancy to academic or specialized knowledge, soft skills are "the talents, capacities and attributes that belong to personality, station and conduct" (Fleischer & Dressner, 2002). The mortal and people skills, frequently known as soft skills, are a complement to hard bents. Interpersonal and mortal relation skills are what they are. The 21st- century tutoring and literacy process greatly benefits from the preceptors' soft skills and tutoring proficiency. The exploration issue is thus extremely important in the current terrain.

NEED AND SIGNIFICANCE OF THE STUDY:

Every person may shape his character with the help of soft talents. Soft skills are acquired through cooperation, concurrence, and collaboration since these strategies may be used to acquire them. Humans might profit from soft skills in problem- working and decision- making. The most important capacities in the contemporary global job request and the fast- paced growth of education are considered to be soft skills. The reorientation of education, which is one trust of education for sustainability, also relates the significance of these so- called soft skills, particularly in a fast- moving technological period. Making opinions is one of the most important aspects of mortal actuality. Tutoring is the noblest profession among all professions. It's a career that shapes the minds of hereafter. It provides the scholars with the skills for survival. tutoring is a complex set of a task which demands the capability to understand, to communicate, to inspire and to motivate the scholars, to produce tolerance, values, intelligence, enthusiasm, benevolence, personality, sense of humor and empathy. The conception of tutoring has changed from the schoolteacher- centered to learner- centered. They've come a facilitator than the educator and the source of all knowledge. The schoolteacher helps the scholars to acquire not only the right knowledge but also values, stations, habits and skills that are necessary to manage up with the world of hereafter. tutoring- literacy, being a process of commerce and interpretation becomes meaningful and successful only in the presence and operation of soft skills and tutoring faculty in the classroom. Hence the schoolteacher's soft skills play a vital part in order to educate effectively in their classroom. Thus, the problem of the study is to probe the Soft Skills of Prospective preceptors.

REVIEW OF AFFILIATED LITERATURE:

- Bernd Schulz and Polytechnic of Namibia(2008) noted that significance of soft skills in scholars' lives both at council and after council. It discusses how soft skills round hard skills, which are the specialized conditions of a job the pupil is trained to do preceptors to take special responsibility regarding soft skills, because during



scholars, university time, preceptors have major influence on the development of their scholars' soft skills. Bedding the training of soft skills into hard skills courses is a veritably effective and effective system of achieving both a seductive way of tutoring a particular content and an improvement of soft skills. Soft skills fulfill an important part in shaping an existent's personality. It's of high significance for every pupil to acquire acceptable skills beyond academic or specialized knowledge.

- Li- Tze Lee and Tien- Tse Lee (2011) indicated that the preceptors are facing multi-dimensional changes in their places constantly especially in a competitive society in Taiwan. Effective preceptors should retain not only hard skills but soft skills. Compared with advanced education fastening on knowledge delivery, abecedarian academy education focuses not only knowledge but life education. How do preceptors perceive their places as preceptors with respect with soft skills in the pool? The purpose of this study is to explore preceptors' comprehensions of soft skills and actors were abecedarian academy preceptors in central Taiwan while Factor analysis, ANOVA, and t- test were used for data analysis. Six soft skills factors were linked as positive stations, open- mindedness, interpersonal connections, cooperation, communication skills, and creativity. In addition, preceptors with different tutoring gests or educational situations hold different opinions with regard to interpersonal connections and communication skills, independently.
- Vijaya Kumari S.N(2014) preceptors are the catalytic agents of change and concentrate in any society should be to give schoolteacher Education of the loftiest quality. Quality Teacher Education leads into Quality school Education. 'Soft Skills' are 'particular Skills' comprising of particular attributes and inter particular capacities that drive one's eventuality for sustained growth, enhances an existent's social relations, job performances and career prospects. High lighting the need of furnishing Soft Skills training for preceptors the paper presents the findings of the study conducted on Secondary School preceptors. The study reveals that Soft Skills and Responsibility are associated to each other and suggests to having the Quality School Education Soft Skills training should come an integral part of all Pre-services and In- service schoolteacher Education Programme to strengthen and sustain Soft Skills of the preceptors directly and Responsibility laterally.

OBJECTIVES OF THE STUDY:

- To assess the situations of soft skills of prospective preceptors with respect to the following soft skills i.e., Critical thinking,
- To find out the variables in critical thinking among B.Ed. Student preceptors concerning
 - a) Gender
 - b) Locality

HYPOTHESES OF THE STUDY:

- The position of Soft Skills among B.Ed. Student preceptors is moderate in nature.
- There's no significant difference in Soft Skills of B.Ed. Student preceptors concerning.
 - a) Gender
 - b) Locality

THE METHODOLOGY OF THE STUDY SYSTEM:

The experimenters borrow the check system to collect applicable data from asked areas. Population A population is any group of individualities that have one or further characteristics in common. The sample for the present study includes, the Pupil- preceptors those who are studying in Private Colleges of Education in Guntur District of Andhra Pradesh.

Sample size: In the present study 100 B.Ed. Student preceptors were aimlessly named by the arbitrary criteria.

Sampling Technique: The researcher used random sampling technique for selecting the sample.

Research Tools Used: The following exploration tool used for collection of data.

- Soft Skill force developed by Sasi Priya and Annaraja (2009).

Statistical Techniques Used: The following statistical techniques used to analyze the data:

- Mean and Standard Deviation and t- test

DATA ANALYSIS AND INTERPRETATION

Showing Important Statistical Constants based on the scores of Soft Skills for the Total Sample.



TABLE 1: Whole Sample Data Analysis

Whole	Mean	SD	Median	Mode	variance	Skewness	Kurtosis
100	100.57	2.21	101	101	4.914	-0.705	0.026

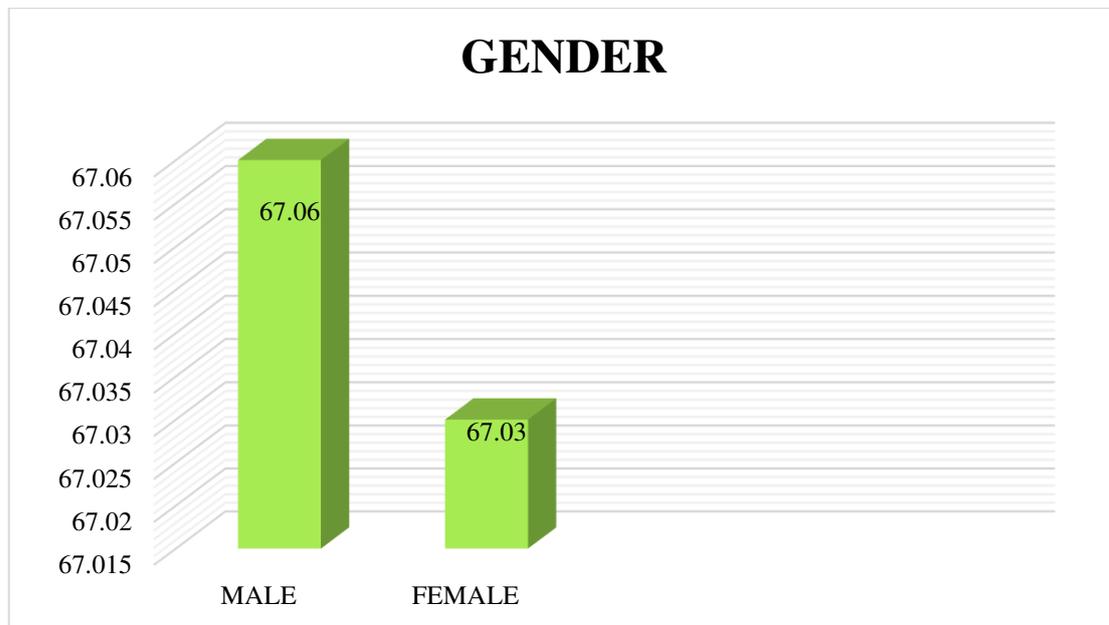
DISCUSSION:

The Mean value of the professional ethics of secondary school teachers is 100.57. The Standard Deviation is 2.21, and variance is 4.91. The values obtained for Mean, Standard Deviation, and shows that the distribution is almost normal. The prospective teachers are having soft skills is more than above average.

Table 2: Critical thinking among B.Ed. Student teachers based on Gender

Gender	N	Mean	Std. Deviation	% of Mean	t-value
Male	40	100.60	2.11	67.06	0.10
Female	60	100.55	2.30	67.03	

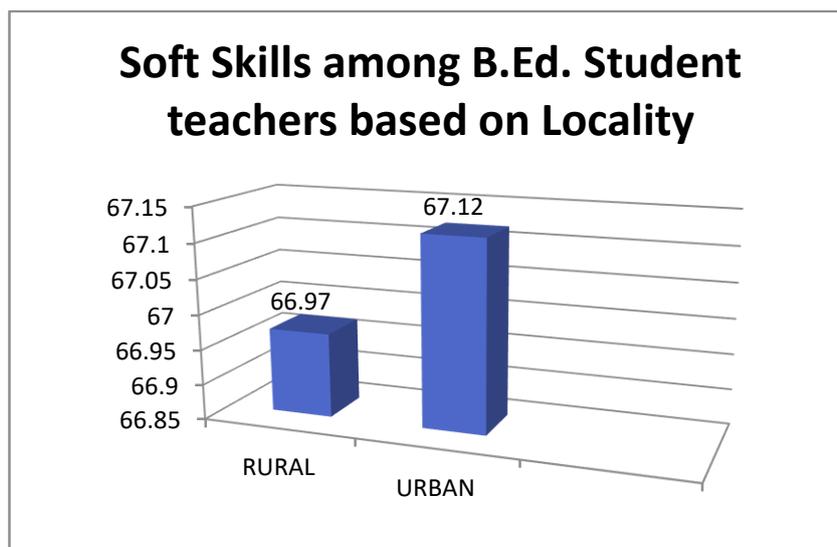
GRAPH-1: Critical thinking among B.Ed. Student teachers based on Gender



From the above table, the calculated 't' value is 0.10 lesser than the table value (1.96). It is found that there is no significant difference between the male and female B.Ed. Student teachers concerning their Soft Skills. Hence the null hypothesis is accepted.

Table 2: Soft Skills among B.Ed. Student teachers based on Locality:

Locality	N	Mean	Std. Deviation	% of Mean	t-value
Rural	50	100.46	2.37	66.97	0.49
Urban	50	100.68	2.07	67.12	



From the above table, the calculated 't' value is 0.49 lesser than the table value (1.96). It is found that there is no significant difference between the Rural and Urban B.Ed. Student teachers concerning their Soft skills. Hence the null hypothesis is accepted.

MAJOR FINDINGS OF THE STUDY:

- The study result reveals that there is no significant difference between the male and female B.Ed. Student teachers concerning their Soft Skills.
- It was found that there is no significant difference between the rural and urban B.Ed. Student teachers concerning their Soft Skills

EDUCATIONAL IMPLICATIONS:

The goal of the current study is to identify potential instructors' soft skills. The researcher has provided some recommendations that the educational institutions might employ to enhance soft skills. To improve potential teachers' soft skills, educational institutions are required to run certain programmes. In addition to this, management should establish an environment that encourages potential teachers to become interested in their work, which will help them develop soft skills.

CONCLUSION:

Teachers need a wide range of competencies to face the complex challenges of today's world. Each teacher has different levels of skills, abilities and competencies due to their different levels of teaching experiences and different educational background. Based on these differences, they will display different sets of motivation, commitment and engagement. Creative Thinking has different dimensions such as mastery of subject matter, enhancement of motivation of students, planning, presentation and evaluation skills and classroom managerial skills. In the area of educational research, the importance of affective skills in the teaching-learning process has been studied. A step further, a more holistic term 'Soft skills' has been gaining importance in the field of education also. But very little has been done in concrete terms to plan Soft Skills training in Teacher Education. Teacher possessing all these skills to a reasonable extent can be a competent teacher.

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Healthy Food habits for Sports Persons

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Abstract: Good diet and nutrition can enhance sporting performance. Carbohydrates should form the basis of the sportsperson's diet. For most athletes, a varied healthy diet will provide vitamins and minerals, as well as protein, to promote growth and repair of muscle tissues. Adequate fluid intake is essential to help performance and prevent dehydration. Preparing for the game takes lot of training and discipline. Hard training with teammates, inspirational speeches from the coach and other seniors of the team, and a short prayer are among other important things you don't forget before the game begins. But these are not the only thing that you need for an excellent performance. Maybe you should be asking yourself... what did you eat before the game?

Key Words: Healthy food, Diet, Nutrition, Carbohydrate, Protein, Fat, Water, Minerals & Vitamins etc.

INTRODUCTION:

What you eat before, and after the game and training sessions are to a larger extent contributing factors to your performance and health as an athlete. Most young athletes tend to ignore how much a good diet can help them perform to their fullest. They're often overwhelmed with thoughts of fame and becoming stars, but they forget the basics... a healthy diet!! They don't really know how to combine food and fitness to reach their potential. An interesting thing about eating for sports is that it's not too complicated. It doesn't require you to change your diet or buy any special food supplements. The same regular meal and snacks can help you reach top form. You'll just need to eat from all food groups for full nutrients package your body needs for superb performance. Have a healthy combination of foods that are rich in protein, carbohydrates, vitamins, minerals and other nutrients to be top of your game. Foods that a sportsperson must eat sparingly. All sports people require a balanced diet with an appropriate intake of carbohydrate, protein, fat, water, minerals & vitamins etc. Most sportspeople tend to lose focus and interest in their game because of an upset stomach caused by indigestion. There are foods that take longer to digest and may deprive you to be on top of your game. Besides food, eating disorders may cause indigestion here are few causes of indigestion. Food items such as lime, ginger, and fresh coriander must be added to your meal to help digestion.

CARBOHYDRATES: Foods that are rich in carbohydrates are full of energy for all body functions. Your body needs as much carbs as possible for full support of muscle and cell health and proper functioning. Carbs can be grouped into two categories – sugars and starches.

Sugars: these are carbohydrates that your body find easy to digest and include foods like fruits, candy, jelly, cake, soda etc. Excessive intake of these foods may cause health problems. Minimize consumption of these as you combine them with other minerals from other food groups.

Starches: these are complex carbs that take longer to digest and may fill your tummy if too much is consumed. These include foods such as bread, grains, pasta, noodles and vegetables etc. Making better carbohydrate choices

- Eat whole-wheat bread instead of white bread
- Instead of high in fat and sodium snacks, switch to low-sodium and whole wheat crackers.
- Use skimmed milk for baking and for drinking instead of whole milk since it has a higher fat content.
- Use applesauce instead of cooking oil.
- Splenda is a sweet-testing replacement of pure sugar

PROTEIN: Protein is an important part of a training diet and plays a key role in post-exercise recovery and repair. Protein needs are generally met by following a high-carbohydrate diet, because many foods, especially cereal-based foods, are a combination of carbohydrate and protein. The amount of protein recommended for sporting people is only slightly higher than that recommended for the general public. For example-



- **General public and active people** – the daily recommended amount of protein is 0.8–1.0 g/kg of body weight (a 60 kg person should eat around 45–60 g of protein daily).
- **Sports people involved in non-endurance events** – people who exercise daily for 45–60 minutes should consume between 1.0–1.2 g/kg of body weight per day.
- **Sports people involved in endurance events and strength events** – people who exercise for longer periods (more than one hour) or who are involved in strength exercise, such as weight lifting, should consume between 1.2–1.7 g/kg of protein of body mass.

Dietary surveys have found that most athletic groups comfortably reach and often exceed their protein requirements by consuming a high-energy diet. Despite this, protein and amino acids (the building blocks of protein) are popular nutritional supplements.

IRON, VITAMIN & MINERALS:

A well-planned and nutritionally adequate diet should meet an athlete's vitamin and mineral needs. Supplements will only be of any benefit if your diet is inadequate or you have a diagnosed deficiency, such as an iron or calcium deficiency. There is no evidence that mega-doses of vitamins improve sporting performance. Use of vitamin and mineral supplements is potentially dangerous and they should not be taken without the advice of a qualified health professional. Dietary imbalances should be adjusted by analysing and altering the diet, rather than by using a supplement or pill. The trick is to have a balanced diet on all occasions to ensure the proper functioning of the body. Therefore, it is necessary to get all the greens stocked on the plate before that big game or workout. Vegetables and fruits are high in vitamins and minerals. These are the basic roots of a balanced diet and studies confirm that a high intake of vegetables and fruits could fuel sufficient iron, calcium, carbohydrate and protein into the system. The best thing about vegetables and fruits is that large quantities or consumption does not hinder or affect health and rather helps to work towards building a better lifestyle. All vegetables, especially the green ones such as spinach, lettuce, leeks, broccoli, asparagus, peas, cabbage and beans, are high in minerals, calcium, iron and other vitamins. These not only ensure proper circulation of oxygen all through the body but also ensures the production of new blood cells, keeping the system healthy overall.

WATER:

Dehydration can impair athletic performance and, in extreme cases, may lead to collapse and even death. Drinking plenty of fluids before, during and after exercise is very important. Don't wait until you are thirsty. Fluid intake is particularly important for events lasting more than 60 minutes, of high intensity or in warm conditions. Water is a suitable drink, but sports drinks may be required, especially in endurance events or warm climates. Sports drinks contain some sodium, which helps absorption. A sodium content of 30 mmol/L (milli moles per litre) appears suitable in sports nutrition. Using salt tablets to combat muscle cramps is no longer advised. It is lack of water not sodium that affects the muscle tissue. Persistent muscle cramps might be due to zinc or magnesium deficiency. Things to remember Water is a great choice of fluid for athletes to help performance and prevent dehydration.

BAD DIET HABITS: There are certain diet habits that young athletes adopt that are not good for their career and general health condition as whole:

- Fat intake is not bad for athletes.
- Imbalance of salt and fluid intake.
- Overeating.
- Carbo loading.
- Consumption of reheated foods.
- Raw or half-cooked meat is dangerous for athletes.
- Excessive salt intake.
- Alcohol consumption.
- Smoking.
- Do not drink water immediately after eating, but wait for a minimum of one hour, optimally, two hours.
- Do not drink a lot of fluids while eating as this slows the digestive process.
- Fried foods are difficult to digest and are best avoided.
- Raw foods are also indigestible.
- It is also a good idea to eat less, as overeating can result in immediate sickness.
- Frozen milk is hard on digestion and may cause stomach disorders.



- Salads and ice creams can be harmful to a sportsperson.
- Most digestive problems can be cured by short-term fasting. A natural cure for indigestion is to sip water over a period of time.
- Don't continue eating until you are full. Let your meal digest totally before eating something else. Eat again after at least four hours. If you want to achieve optimum.

CONCLUSION:

Eating only one type of food can lead to serious nutritional deficiencies in an athlete's body. So, always make sure that your pregame meal is enriched and balanced with vitamins, minerals, proteins and fats to ensure best health and better performance on the field.

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COMPRESSION OF WILL TO WIN BETWEEN DIFFERENT COLLEGES AND DIFFERENT MALE VOLLEYBALL PLAYERS IN YADGIR DISTRICT

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Abstract: *The purpose of this study to find out psychological variable will to win between different colleges and different male Volleyball players in yadgir district. Will to win defined as the intensity of the desire to defeat an opponent to exceed some performance standard in given sports.*

Key Words: *Volleyball, Will to Win, Performance.*

INTRODUCTION:

In the world of sports physical fitness is not regarded as the main factor to achieve success. In addition to physical fitness, technical and tactical abilities, the sports psychology and the sports sociology play an effective role in achieving excellence in sports career. The main thrust of modern sports on winning not just participating and playing. Physical health or fitness or joy is no longer the purpose or even the target. Sports and games are competitive in nature. Volleyball is game requiring high level of fitness. Volleyball players need a good combination of physical and psychological wellbeing. Of all the factors affecting sports performance, it seems that the most important is the ability of the athlete to identify and assume the appropriate feeling required to perform at his best when he needs to do. Personality which influence the performance also affect by many factor like will to win emotional intelligence, motivation etc. Hence we were discussing here psychological variable will to win. There is need to study will to win because will to win affect largely our performance. Will to win defined as the intensity of the desire to defeat an opponent to exceed some performance standard in given sports. This construct is similar to need-achievement and internal locus of control. It is also related partly to competition and some part of aggression. Volleyball is a game of positional play each position is distinct, and each position player has responsibilities designed to contribute to overall team success. Will to win a paramount role play in sports. How an athlete's handle the urge of win determines how successful he would be. Will to win may be a positive motivating force or it may interfere with successful performance in sports events. Poul (1960) rightly remarked " A winner never quits and the quitters never win", That means if one has desire to win surely win. It indicates that where there is a will, there is a way, Kauss (1996) how you feel is how you play. The significance of will to win influence on sports performance has often been evident in most comments of spectators, team managers and team performance during and after competition. Volleyball game play on different colleges and different. This study therefore investigate the applicability of will to win Male Volleyball players of different. Limited research has studied will to win. It seems intuitive that the level of one's will to win will relate to their performance and behavior on sports field. Research has show psychological skills facilitate athletic performance.

MATERIAL AND METHOD:

Material and method: The investigator had selected sixty male Volleyball players of different colleges in yadgir district. They were divided into two group (N=30; university and N=30; different). The purposive sampling technique was used to select the subject test applied to compare the different colleges and different male Volleyball players. The level of significance was set at 0.05 level. In order to measure the level of will to win of the subject (Kumar and Shukla 1988) questionnaire was used. **Result and Discussion:** There were significant difference found variable will to win between different colleges and different male Volleyball players. While calculating the mean value it was observed that different male Volleyball players had demonstrate significantly will to win as compared to university male Volleyball players. It show that different male Volleyball players are more determined to play well, pay more attention, show positive behaviour, demonstrate fighting spirit as compared to university male Volleyball players. **Conclusion:** It is concluded from the findings that significant difference found between different colleges and



different male Volleyball players, variable will to win. Thus it show, that different male Volleyball players had high level will to win from different colleges.

Variables and Tool:

For the collection of data researcher Administer (Kumar and Shukla,1988) will to win questionnaire. Will to win questionnaire consist of 14 items, in which 7 items are true and 7 items are false. For each item .1 score should be given for following responses, so that maximum score may be 14 on this questionnaire and minimum being 0 and higher reflects greater will to win.

Procedure:

The questionnaire will to win administered of different colleges and different male Volleyball players (each N=30) of subjects. Direction and instruction given by researcher carefully. The response sheet were scored as per instruction and raw data were collected and statistically processed.

Statistical analysis:

The raw data with respect to psychological variable will to win between Male Volleyball players of different colleges and different statistical analysed to conduct 't'-test. The level of significant difference was set at 0.05 level.

RESULTS:

The scores of the will to win questionnaire were analysed to determine any significance the might exist between different colleges and different male Volleyball players and the result is presented in the following table. Significance of difference between university and different Male Volley ballplayers with regard will to win. One can acknowledge in the cited table that significant difference exist between different colleges and different male Volleyball players in their will to win as the 't' value -2.1915 is more than tabulated 't' at 0.05 level of significance. The mean score of different colleges male Volleyball players was lower than the mean score of different male Volleyball players. This indicates that will to win of different male Volleyball players had high level will to win from different colleges. Colleges and different. It shows that different male Volleyball players had demonstrated significantly will to win as compared to university male Volleyball players. Singh & Reddy (2010) showed significant differences with regard to will to win among male long distance runners, short distance runners, jumpers and throwers.

CONCLUSION:

It is concluded from the findings that significant differences between different colleges and different male Volleyball players on the psychological variable will to win. Different players had high level of will to win from different colleges in yadgir district.

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Recent Trends of Fishery Sector in Karnataka

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Abstract: Inland fisheries are significantly contributed to Karnataka's economy. Thus, after agricultural activities, fishery activities play a very Crucible role in the generation of income and employment opportunities, especially in the rural areas of the state. In this regard trend of inland fish production in Karnataka was analysed based on the production of fish for the last eight years. Until the early eighties, the fishery economy of Karnataka was largely influenced by internal demand mainly from the rural and nearby urban markets. This is mainly due to the non-availability of reliable modern processing technology. Karnataka is a major producer of fish and ranks 6th in overall fish production, 4th position in marine fish production, and 9th position in Inland fish production. The fish production from the state contributed 4.46% of India's total fish production in the financial year 2019-20. The present level of per capita fish availability in the Karnataka state is around 8.08 kg. The contribution of the Fisheries sector to GSDP at current prices 2014-15 was Rs. 5004 Crore and it has increased to Rs. 7827 Crore in 2020-21. In the year 2020-21 inland fish production is 2.51 lakh metric tons and yield the revenue to GSDP is Rs. 2266.92 Crore. So, it is important to do a statistical analysis of the f state to understand the actual product compared to previous years. Hence, this paper is an effort to show the recent trends in the fishery sector of the state and to suggest some measures for the overall development of the fishery sector.

Key Words: Fishing, Fishery resources, Inland Fishery, Marine Fishery, Fish Production,

INTRODUCTION:

Fish is a major source of cheap animal protein in the world it contains omega-3 fatty acids, and Vitamins such as vitamin D, and B2 (Riboflavin). Fishes are rich in Phosphorous and Calcium and are a great source of minerals, such as iodine, potassium, zinc, and magnesium. but the current issues the availability of fish protein has been at high risk for the past two decades due to the decline the fish production possible. Moreover, the increasing population of our country is another reason for fish obtainability to poor people which leads to an unhealthy nation. India has an 8118 km coastline and equally large areas of estuaries, backwaters, lagoons, etc., favourable for developing capture as well as cultural fisheries. In India, Inland fishery resources cover 1.96 lakh km of rivers and canals, 30.15 lakh hectares of reservoirs, 24.50 lakh hectares of ponds and tanks, and 7.98 lakh hectares of beels, derelict water bodies, and 12.40 lakh hectares of brackish water areas. The fishing sector occupies a predominant and unique place in Karnataka. Karnataka state, blessed with 320 km of long coastline, 87000 sq. km of Exclusive Economic Zone, and 27000 sq. km of Continental shelf area is one of the most productive areas as far as fishing is concerned. The fisheries sector contributes Rs. 6244.65 crores to Karnataka's economy. The fisheries economy of Karnataka had been traditionally conceptualized as a network linkage in the realms of production, consumption, and exchange. Indigenous methods of fishing practices are followed in the state for a long. Production and exchange relations in this rudimentary economy are influenced by the growth in internal and external consumption.

Karnataka state has 5.65 lakh hectares of inland water resources, which provide predominant scope for the development of inland fisheries in Karnataka. It is classified as 4,605 large irrigation tanks in the state covering an area of 2,13,404 ha. With an average of 50 ha. As opposed to 19,673 small tanks, with an average area of <7 ha large tanks have been considered at par with small irrigation reservoirs. The 74 reservoirs in Karnataka cover an area of 2,23,887 ha. Among them, 46 belong to the category of small reservoirs <1,000 ha with a water spread of 15,253 ha. After taking into account the irrigation tanks the total surface water area of small reservoirs those less than 500 ha. Thus, Karnataka has 4,37,292 ha of water area under different categories of manmade impoundments. Karnataka's total water area under man-made impoundments covering an area of 4,37,231 ha is undoubtedly one of the largest in the country holding tremendous potential for fisheries development. The annual estimated fish production potential of



these resources is around 4.02 lakh metric tons. In Karnataka Total number of populations engaged in fishery, activities are estimated to be 9.61 lakh. It includes 3.28 lakh marine fishermen and 6.33 lakh fishermen are in inland, who are involved in various fisheries activities during the year 2020-21. (As per Handbook of Fisheries Statistics 2020). The fishery sector is recognized as a powerful income and employment generator as it stimulates the growth of several subsidiary industries and is a source of cheap and nutritious food.

OBJECTIVES: The main objectives of this paper are:

- To explore the present status of the fishery sector of Karnataka such as fish production, fish seed production, fishery resources, and gender-wise fishermen population.
- To suggest some measures for the development of the fishery sector of the state.

METHODOLOGY:

This study was based on secondary data collected from various sources including Fisheries Statistics 2020-21 published by Directorate of Fisheries, Government of Karnataka, Directorate of Fisheries Government of India, Annual reports of Department of Fisheries Government of Karnataka, Official website of the Department of Fisheries, Karnataka, ENVIS Centre: the Karnataka State of Environment and Related Issues. Regarding the fisheries resources, Fish production was compiled for the period of 2013-14 to 2020-21. The Statistical methods are used for data analysis, where different graphs (Line graph, Bar Graph, and Pivot table) annual growth rate, Graphical, trend analysis, and the scattered plot was developed using MS Excel, and are used to explain statistical tables in the simple form.

GENDER WISE FISHERMAN POPULATION:

In Karnataka, during 2020-21, the fishermen population is around 9.74 lakh which comprises fish farmers, fish workers, and fishers, out of which 30% are female and rest 47% are male, with this 10% of Active female fishermen and 13% of Male active fishermen (including both inland and marine fishermen) (Handbook on Fishery Statistics, 2020). In the state of Karnataka, the fishermen’s population is around 9.74 lakh out of which 39% are female and 61% are male (Antara Dutta, 2021). People involved in fishing are categorized into three groups: people those catching fish for daily use, people belonging to the fishing community and are dependent on fishing for their livelihood, and rural entrepreneurs (Leaseholders) (Gogoi et al., 2015). Furthermore, the fishermen population of the state can also be categorized as full-time which 43% being female and 57% are male in each of the categories respectively.

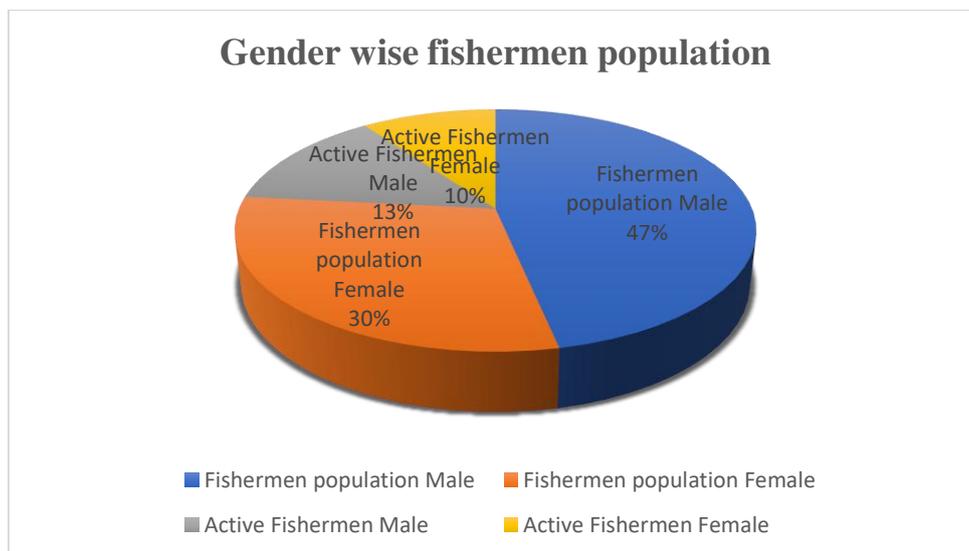


Figure 1

Source: Handbook of Fisheries Statistics, Directorate of Fisheries 2020 (Govt of Karnataka)

FISHERY RESOURCES IN KARNATAKA:

Marine resources: Traditionally, the Karnataka coast is known as the “Mackerel Coast”. The marine fisheries resource potential of the State is estimated at 6.02 lakh metric tons. The pelagic fishery wealth of the Karnataka coast, mainly comprising mackerel and oil sardine, used to be traditionally harvested by operating shore seine known as



"Rampani". But this method has now become almost obsolete (Table 1). Traditionally, the Karnataka coast is known as the "Mackerel Coast". The marine fisheries resource potential of the State is estimated at 6.02 lakh metric tons. The pelagic fishery wealth of the Karnataka coast, mainly comprising mackerel and oil sardine, used to be traditionally harvested by operating shore seine known as "Rampani". But this method has now become almost obsolete. Karnataka has vast resources for the development of marine fisheries. The mechanization of fishing open operations initiated with the introduction of 30 – 46 ft. trawlers in 1957 for exploiting inshore demersal resources including shrimps. The introduction of purse seines in the 1970s extended the area of fishing operations for shoaling pelagic resources. Motorization of traditional crafts like gill-netters and long-liners and encouragement of offshore fishing beyond 50 meters depth using bigger vessels for 7-8 days have effectively increased the range and efforts of fishing operations. Further, financial institutions have extended the required loan facilities for owning bigger fishing boats, which has helped in increasing fleet strength. In recent years, fishermen are being trained in the operation of sophisticated electronic equipment both for fishing and navigation (Table 1).

Inland resources:

Table: 1:

Sl. No	Sources	Sq Km
1	Exclusive Economic Zone	87000
2	Continental Shelf	27000
3	Coastal length	320
4	Fishermen population	3.28
5	Active fishermen population	1.57
6	Fishermen villages	156
7	Harbors	8
8	Fish Landing Centers	16
9	Beach Landing Centers	91
10	Mechanized Boats (T, P, GN & others)	4542
11	Motorized Boats	8949
12	Traditional Boats	9044
13	Ice Plants	195
14	Cold Storages	32
15	Freezing Plants	14
16	Frozen Storages	11
17	Canning Plants	8
18	Fish Meal Plants	21
19	Boat building yards	27
20	Net making plants	3
21	Shrimp Hatcheries	5
22	Fisheries Co-operative Societies	130
23	Fishery Co-op. Apex Federations	2
24	Fish Markets	280

Source: Handbook of Fisheries Statistics, Directorate of Fisheries 2020 (Govt of Karnataka).



The State has 5.65 lakh ha, of inland water resources, which provide immense scope for the development of inland fisheries in Karnataka. The annual estimated fish production potential of these resources is around 4.02 lakh metric tons. During the period between 1956 and 1966, the important activity in the inland fisheries sector was to import fish seed, mostly riverine major carp fry collection from West Bengal. Fish seed production and rearing farms have been set up in the Government sector to develop the much-needed infrastructure for producing fish seed for stocking in tanks, ponds, and reservoirs of the State.

Table: 2:

Sl. No	Sources	
1	Departmental tanks (>40 ha achcut) W.S.A 1.79 Lakh ha	3906 No.
2	Gram Panchayat tanks (<40 ha achcut)W.S.A 1.24 Lakh ha	22414 No.
3	Water spread area of tanks	2.93 lakh ha
4	Reservoirs	82 No.
5	Length of rivers	5813 km
6	Length of canals	3187 km
7	Brackish Water Area	8000 ha
8	Fish seed Production and Rearing Centers	
	A)Government	
	a)Production and Rearing Centers	17
	b)Rearing Centers	30
	c)Taluk Level Nurseries	60
	B) Private	
	a) Production and Rearing Centers	02
	b) Rearing Centers	300
9	Fishermen population	6.33 lakhs
10	Active Fisherman Population	1.39 lakhs
11	Fisherman Co-Operatives Societies	524
12	Fisherman Co-Operative Apex federation	1
13	Fisherman training centers	4
14	Fish Markets	610
15	Aquaria	13
16	Ice Plants	75
17	Cold Storages	22
18	Freezing plants	1
19	Frozen storages	1

Source: Handbook of Fisheries Statistics, Directorate of Fisheries 2020 (Govt of Karnataka).

At present, there are 47 fish seed production and rearing farms under the control of the Fisheries Department and Zilla Panchayat and 60 Taluk level nurseries in the State. The State requires about 56 crore fish fingerlings to develop all water resources (percent utilization) suitable for fish culture. The present fish seed production is about 60 crore fish fries contributing to the stocking of 25 to 30 crore fish fingerlings annually (Table 2). The major programs initiated under inland fisheries development include assistance for construction of fish ponds, stocking of grass carp seeds, construction of ponds in waterlogged areas, development of fish sanctuaries, and intensive fish culture with Central Government assistance from 2019-20 onwards, a new scheme on providing 50% subsidy for purchase of fish seed and supply of fishery requisite kits was introduced. In 2013-14 the subsidy has been enhanced to Rs. 10,000 under the free distribution of fishing kits. An ornamental fish quarantine unit is also established at Hesaraghatta, Bangalore Urban District to promote the ornamental fisheries trade in the state. (Table-2). Due to the involvement of the state government, the fishing sector faces tremendous growth in the past ten years. The Department of Animal Husbandry Dairying and Fisheries is the main authority for the development of the fishery sector and the Ministry of Food Processing Industries plays as an agent for the growth of fishing industries and provides employment to the fisherman and female members of fishermen's families. Based on the Blue Revolution the government has undertaken some measures based on promoting aquaculture, adequate training of fishermen about new technology and tapping neglected water bodies and the Blue Revolution were announced with increased investment, infrastructure development, and proper training for fishermen in the fishing sector. They provide the various legislations like environment protection act, water act, fisheries act, etc. charter foreign vessel banning were undertaken and provide



the motorized traditional fishing craft with modern technology and techniques. To meet the increased demand for fish seed, the Government has also encouraged the establishment of private fish seed production and rearing farms by providing encouragement subsidies.

Fish Production:

Figure 2 shows that Inland fish production is lower than marine fish production. In 2020-21 marine fish production were be decreased. And inland fish production increased in 2020-21. If we consider fish production in the last 8 years (2013-14 to 2020-21) the growth in marine fish production is flat; Inland fish production is also not very much inspiring. But in 2020-21 Inland fish production is inspiring (Figure 2) and (Table 3).

Table 3:

Fish Production in Karnataka (in Metric tons)				
Sl.No	Year	Marine	Inland	Total
1	2013-14	357358	203914	561272
2	2014-15	389822	223419	613241
3	2015-16	411762	168828	580590
4	2016-17	398928	158566	557494
5	2017-18	414348	188174	602522
6	2018-19	389491	197921	587412
7	2019-20	403368	228633	632001
8	2020-21	347064	251881	598945

Source: Handbook of Fisheries Statistics, Directorate of Fisheries 2020 (Govt of Karnataka)

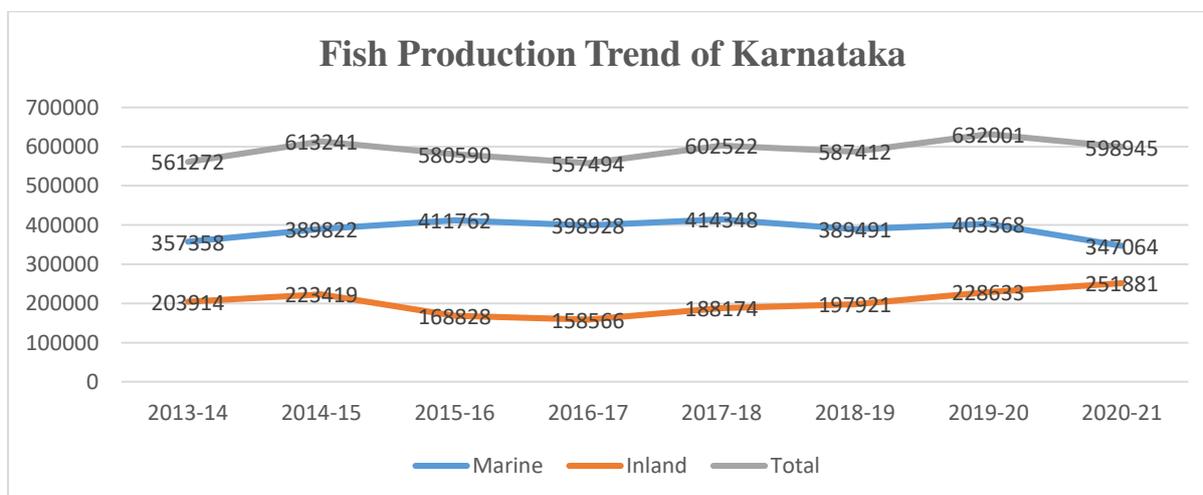


Figure 2.

Source: Table No: 3.

SUGGESTIONS: In Karnataka, the demand for fish is more than the supply. But despite several schemes adopted by the state, the overall production of fish is quite less. To boost fish production and overall development of the fishery sector of Karnataka, some of the measures which need to be adopted are as follows:

- Recycling of fish waste: Fish waste can be recycled which will not only curb pollution but can even become a source of revenue for the state.
- The digital market for fishery: The development of online market platforms is evitable to connect buyers directly with the fishers. To achieve this, fishermen of the state should be trained free of cost to use online marketing platforms through various programs and awareness campaigns.



- Start-ups with the technology-based solution: In Karnataka, various start-ups with technology-based solutions should be set up locally by providing opportunities to the educated youth of the state resulting in innovation and development.
- Encourage the local entrepreneurs: The government should take initiative along with private enterprises, NGOs, SHGs, etc. to encourage and empower local communities as well as local entrepreneurs including women for their increased participation in fishery-related entrepreneurial activities, especially in rural and remote areas of the state. To achieve this, soft loans on a long-term basis, training for skill development, and technological knowledge awareness programs on women's rights, entrepreneurship, and the business process should be adopted.

CONCLUSION:

Karnataka fishery activities have always remained a major source of livelihood for the people of the state generating a considerable amount of income and employment opportunities. Although Karnataka has adopted various schemes for the development of the fishery sector yet the overall production of fish in the state is quite less which in turn has resulted in a shortage of supply compared to the demand for fish. Based on our analysis it can be concluded that the Inland Fish Production trend in Karnataka is increasing year by year. Karnataka is blessed with favourable geographic and climatic needed for developing the fisheries sector, yet modern methods of enterprise development are needed. To make Karnataka state leading in Inland fish production it is very much essential to establish fish hatcheries for the production of quality fish seeds in good quality. It is needed to establish feed manufacturing units for obtaining good quality feed, increase subsidies so that Fishermans can shift towards fish farming, and proper marketing system to get more profit. It is felt that there is a significant decline in fish production in the year 2016-17 because of the drought. Cultural fisheries with a higher growth rate and adoption to the environment will also help in the Inland fish production of the state.

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Existence of entire solution of the Nonlinear q-shift Differential-Difference Equations

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Abstract: In this paper, we analyze the transcendental entire solution of non-linear q-shift difference-differential equations. We extend and generalize the results of Jianxun Rong and Junfeng Xu in the research article entitled "Three results on the non-linear Differential equations and Differential-Difference Equations" and many others. Thereby results are verified for the q-shift of difference-differential equations. The main objective of this paper is to give transcendental entire solutions of some specific form of non-linear q-shift difference-differential equations. The results proved by Weiran Lu, Linlin Wu, Dandan Wang and Chungchun Yang in the paper "The existence of solutions to certain type of nonlinear difference differential equations" has advanced by considering non-linear q-shift difference-differential equations.

Key Words: Nevanlinna theory, Entire solutions, Difference-differential equations, q-shift, etc.

INTRODUCTION:

In this paper, the term 'meromorphic' will always mean meromorphic in the whole complex plane $\bar{\mathbb{C}}$. It is assumed that the reader is familiar with standard notations and fundamental results of Nevanlinna theory ([3]-[6]). We denote by $S(r, f)$ any quantity satisfying $S(r, f) = o\{T(r, f)\}$ as $r \rightarrow +\infty$, possibly outside of a set of finite linear measure. For $a \in \bar{\mathbb{C}}$ and k be a positive integer, we denote by $N_{(k)}(r, a, f)$ be the counting function for the zeros of $f(z) - a$ with multiplicity $\geq k$, and $\bar{N}_{(k)}(r, a, f)$ be the corresponding one for which the multiplicity is not counted. In this paper, we denote by

$$N_k(r, a, f) = \bar{N}_{(1)}(r, a, f) + \bar{N}_{(2)}(r, a, f) + \dots + \bar{N}_{(k)}(r, a, f)$$

Let $f(z)$ and $g(z)$ be two meromorphic functions. If $f(z) - a$ and $g(z) - a$ assume the same zeros with the same multiplicities, then we say that $f(z)$ and $g(z)$ share the value 'a' CM, where 'a' is a complex number. Recently, the Nevanlinna theory involving q-difference has been developed to study solution of q-difference equations and uniqueness of q-difference polynomials. Many papers have focused on complex difference, giving many difference analogues in Nevanlinna theory of meromorphic functions (see [1][7][8]).

LITERATURE REVIEW:

In 2011, Ping Li[10] proved the following two theorems on entire solutions of certain type of differential equations.

Theorem A : Let $n \geq 2$ be an integer, $P(f)$ be a differential polynomial in f of degree at most $n - 1$ and p_1, p_2, λ be three non-zero constants. If f is a meromorphic solution of

$$f^n(z) + P(f) = p_1 e^{\lambda z} + p_2 e^{-\lambda z}$$

And $N(r, f) = S(r, f)$, then there exist two nonzero constants c_1 and c_2 ($c_j^n = p_j$), and a small function c_0 of f such that $f = c_0 + c_1 e^{\frac{\lambda z}{n}} + c_2 e^{-\frac{\lambda z}{n}}$

Theorem B : Let $n \geq 2$ be an integer, $P(f)$ be a differential polynomial in f of degree at most $n - 2$ and $p_1, p_2, \alpha_1, \alpha_2$ be non-zero constants and $\alpha_1 \neq \alpha_2$. If $f(z)$ is a transcendental meromorphic solution of the following question.

$$f^n(z) + P(f) = p_1 e^{\alpha_1 z} + p_2 e^{\alpha_2 z} \quad (I)$$



Which satisfying $N(r, f) = S(r, f)$, then one of the following relations holds:

- (1) $f(z) = c_0(z) + c_1 e^{\frac{\alpha_1 z}{n}}$
- (2) $f(z) = c_0(z) + c_2 e^{\frac{\alpha_2 z}{n}}$
- (3) $f(z) = c_1 e^{\frac{\alpha_1 z}{n}} + c_2 e^{\frac{\alpha_2 z}{n}}$ and $\alpha_1 + \alpha_2 = 0$,

where $c_0(z)$ is a small function of f and constants c_1 and c_2 satisfy $c_1^n = p_1$ and $c_2^n = p_2$, respectively. The Chen and Gao [11] proved the following theorem by considering $n = 2$ and obtained the following result.

Theorem C : Let $a(z)$ be a nonzero polynomial and $p_1, p_2, \alpha_1, \alpha_2$ be nonzero constants such that $\alpha_1 \neq \alpha_2$. If $f(z)$ is a transcendental entire solution of finite order of the differential equation

$$f^2(z) + a(z)f'(z) = p_1 e^{\alpha_1 z} + p_2 e^{\alpha_2 z} \quad (\text{II})$$

satisfying $N\left(r, \frac{1}{f}\right) = S(r, f)$, then $a(z)$ must be a constant and one of the following relations holds:

- (1) $f(z) = c_1 e^{\frac{\alpha_1 z}{2}}, ac_1 \alpha_1 = 2p_2$ and $\alpha_1 = 2\alpha_2$;
 - (2) $f(z) = c_2 e^{\frac{\alpha_2 z}{2}}, ac_2 \alpha_2 = 2p_1$ and $\alpha_2 = 2\alpha_1$,
- where c_1 and c_2 are constants satisfying $c_1^2 = p_1$ and $c_2^2 = p_2$, respectively.

In 2019, Jianxun Rong and Junfeng Xu[12] remove the condition that $f(z)$ is a finite-order function, improve Theorem B and obtain the following result.

Theorem D: Let $a(z)$ be a nonzero polynomial and $p_1, p_2, \alpha_1, \alpha_2$ be nonzero constants such that $\alpha_1 \neq \alpha_2$. Suppose that $f(z)$ is a transcendental entire solution of the differential Equation (II) satisfying $N\left(r, \frac{1}{f}\right) = S(r, f)$. Then $a(z)$ must be a constant and one of the following relations holds:

- (1) $f(z) = c_1 e^{\frac{\alpha_1 z}{2}}, ac_1 \alpha_1 = 2p_2$ and $\alpha_1 = 2\alpha_2$;
 - (2) $f(z) = c_2 e^{\frac{\alpha_2 z}{2}}, ac_2 \alpha_2 = 2p_1$ and $\alpha_2 = 2\alpha_1$,
- where c_1 and c_2 are constants satisfying $c_1^2 = p_1$ and $c_2^2 = p_2$, respectively.

Next they have consider the general case in Ping Li[10] and obtained the following theorem.

Theorem E : Let $n \geq 2$ be an integer. Suppose that $P(f)$ is a differential polynomial in $f(z)$ of degree $n - 1$ and that α_1, α_2, p_1 and p_2 are nonzero constants such that $\alpha_1 \neq \alpha_2$. If $f(z)$ is a transcendental meromorphic solution of the differential Equation (I) satisfying $N(r, f) = S(r, f)$, then $\rho(f) = 1$ and one of the following relations holds:

- (1) $f(z) = c_1 e^{\frac{\alpha_1 z}{n}}$ and $c_1^n = p_1$;
- (2) $f(z) = c_2 e^{\frac{\alpha_2 z}{n}}$ and $c_2^n = p_2$, where c_1 and c_2 are constants;
- (3) $T(r, f) \leq N_1\left(r, \frac{1}{f}\right) + T(r, \varphi) + S(r, f)$, where $N_1\left(r, \frac{1}{f}\right)$ denotes the counting function corresponding to simple zeros of f and $\varphi(\not\equiv 0)$ is equal to $\alpha_1 \alpha_2 f^2 - n(\alpha_1 + \alpha_2)ff' + n(n - 1)(f')^2 + nff''$.

In 2019, Jianxun Rong and Junfeng Xu[12] went far further study of mentioned equation with $n = 2$. They obtained the following theorem.

Theorem F : Let $a(z)$ be a nonzero polynomial, $k \geq 0$ be an integer and p_1, p_2, λ, c be nonzero constants. If $f(z)$ is a transcendental entire solution of finite order of the differential-difference equation

$$f^2(z) + a(z)f^{(k)}(z + c) = p_1 e^{\lambda z} + p_2 e^{-\lambda z},$$

then $a(z)$ must be a constant and one of the following relations holds:

- (1) $f(z) = \pm \frac{i}{2} a \left(\frac{\lambda}{2}\right)^k + c_1 e^{\frac{\lambda z}{2}} + c_2 e^{-\frac{\lambda z}{2}}$ and $e^{\lambda c} = -1$, when k is odd;



(2) $f(z) = \pm \frac{1}{2} a \left(\frac{\lambda}{2}\right)^k + c_1 e^{\frac{\lambda z}{2}} + c_2 e^{-\frac{\lambda z}{2}}$ and $e^{\lambda c} = 1$, when k is even and $k > 0$, where a, c_1 and c_2 are constants with $\frac{1}{64} a^4 \left(\frac{\lambda}{2}\right)^{4k} = p_1 p_2$ and $c_i^2 = p_i (i = 1, 2)$;

(3) $f(z) = \pm \frac{1}{2} a + c_1 e^{\frac{\lambda z}{2}} + c_2 e^{-\frac{\lambda z}{2}}$ and $e^{\lambda c} = 1$, when $k = 0$, where a, c_1 and c_2 are constants with $\frac{1}{64} a^4 = p_1 p_2$ or $\frac{9}{64} a^4 = p_1 p_2$ and $c_i^2 = p_i (i = 1, 2)$.

MAIN THEOREM:

In this paper, we consider the q -shift difference-differential equation and obtained the transcendental entire solution for this. Further, the results extends the above theorems as follows.

Theorem 1: Let $\alpha_1, \alpha_2, p_1, p_2$ and h be nonzero constants satisfying $\alpha_1 \neq \alpha_2$. Suppose that $k \geq 0$ and $n \geq 2, q > 0$ are integers and that $q(z)$ is a nonzero polynomial. If $f(z)$ is a transcendental entire solution with $\rho_2(f) < 1$ of the differential-difference equation

$$f^n(z) + q(z)f^{(k)}(qz + h) = p_1 e^{\alpha_1 z} + p_2 e^{\alpha_2 z} \quad (1)$$

then we have $\rho(f) = 1$, $q(z)$ must be a constant and one of the following relations holds:

(1) $f(z) = c_1 e^{\frac{\alpha_1 z}{n}}, q c_1 \left(\frac{\alpha_1}{n}\right)^k e^{\frac{\alpha_1 h}{n}} = p_2, \alpha_1 = n \alpha_2$ and $c_1^n = p_1$;

(2) $f(z) = c_2 e^{\frac{\alpha_2 z}{n}}, q c_2 \left(\frac{\alpha_2}{n}\right)^k e^{\frac{\alpha_2 h}{n}} = p_1, \alpha_2 = n \alpha_1$ and $c_2^n = p_2$;

(3) If $n = 2$, we have $T(r, f) \leq N_1\left(r, \frac{1}{f}\right) + T(r, \varphi) + S(r, f)$. If $n = 3$, we have $T(r, f) = N_1(r, 1/f) + S(r, f)$. If $n \geq 4$, we only have the cases (1) and (2).

SOME LEMMAS: In this section, we introduce several lemmas to prove four theorems.

Lemma 1. ([13]): Let $f(z)$ be a nonconstant zero order meromorphic function and let q, c be a nonzero complex number. Then on a set of logarithmic density 1, we have

$$m\left(r, \frac{f(qz+c)}{f(z)}\right) = (S(r, f))$$

outside of an exceptional set of finite logarithmic measures. The main element in our preparations is the following lemma on quotients of shifts, which may be understood as the difference counter part of the lemma on the logarithmic derivatives.

Lemma 2([7]): Let f be a transcendental meromorphic function of finite order ρ . Then for any given complex numbers c_1, c_2 and for each $\epsilon > 0$,

$$m\left(r, \frac{f(z + c_1)}{f(z + c_2)}\right) = O(r^{\rho-1+\epsilon})$$

Remark: Since the preceding lemma fails for meromorphic functions of infinite order. We have been forced to restrict ourselves to finite order solutions of non-linear difference equations, resp.

Lemma 3. ([12]:) Suppose that $f_1(z), f_2(z), \dots, f_n(z) (n \geq 2)$ are meromorphic functions and that $g_1(z), g_2(z), \dots, g_n(z) (n \geq 2)$ are entire functions satisfying the following conditions:

1. $f_1(z)e^{g_1(z)} + f_2(z)e^{g_2(z)} + \dots + f_n(z)e^{g_n(z)} \equiv 0$;
2. $g_j(z) - g_k(z)$ are not constants for $1 \leq j < k \leq n$;
3. For $1 \leq j \leq n$ and $1 \leq h < k \leq n, T\left(r, f_j(z)\right) = o\left(T\left(r, e^{g_h(z)-g_k(z)}\right)\right) (r \rightarrow \infty, r \notin E)$, where $E \subset [1, \infty)$ is a finite linear measure or finite logarithmic measure. Then $f_j(z) \equiv 0 (j = 1, 2, \dots, n)$.

We get the following lemma from Lemma 1 and Lemma 2, which is a version of the difference analogue of the Clunie lemma.

Lemma 4.[9]: Let f be a transcendental meromorphic solution of $\rho_2(f) < 1$ of a difference equation of the form

$$H(z, f)P(z, f) = Q(z, f),$$



where $H(z, f), P(z, f), Q(z, f)$ are difference polynomials in f such that the total degree of $H(z, f)$ in f and its shifts is n , and that the corresponding total degree of $Q(z, f)$ is $\leq n$. If $H(z, f)$ contains just one term of maximal total degree, then for any $\varepsilon > 0$

$$m(r, P(z, f)) = S(r, f)$$

possibly outside of an exceptional set of finite logarithmic measure.

PROOF OF THE THEOREM:

Assume that $f(z)$ is a transcendental entire solution with $\rho_2(f) < 1$ of Equation (1). Applying Lemmas 1 and 2 to Equation (1), we have

$$\begin{aligned} T(r, p_1 e^{\alpha_1 z} + p_2 e^{\alpha_2 z}) &= T(r, f^n(z) + q(z)f^{(k)}(qz + h)) \\ &\leq T(r, f^n) + T(r, q(z)f^{(k)}(qz + h)) + O(1) \\ &\leq T(r, f^n) + m\left(r, \frac{q(z)f^{(k)}(qz+h)}{f(z)}\right) + m(r, f) + O(1) \\ &\leq T(r, f^n) + m\left(r, q(z) \frac{f^{(k)}(qz+h)}{f(z)}\right) + m\left(r, \frac{f^{(k)}(qz+h)}{f(qz+h)}\right) + m(r, f) + O(1) \\ &\leq (n + 1)T(r, f) + S(r, f)(2) \end{aligned}$$

On the other hand, we deduce

$$\begin{aligned} T(r, p_1 e^{\alpha_1 z} + p_2 e^{\alpha_2 z}) &= T(r, f^n(z) + q(z)f^{(k)}(qz + h)) \\ &\geq T(r, f^n) - T(r, q(z)f^{(k)}(qz + h)) + O(1) \\ &\geq nT(r, f) - m\left(r, \frac{q(z)f^{(k)}(qz+h)}{f(z)}\right) - m(r, f) + O(1) \\ &\geq nT(r, f) - m\left(r, \frac{q(z)f^{(k)}(qz+h)}{f(z)}\right) - m\left(r, \frac{f^{(k)}(qz+h)}{f(qz+h)}\right) - m(r, f) + O(1) \\ &\geq nT(r, f) - T(r, f) + S(r, f) \\ &= (n - 1)T(r, f) + S(r, f)(3) \end{aligned}$$

Combining Equations (2) and (3), it follows that

$$(n - 1)T(r, f) + S(r, f) \leq T(r, p_1 e^{\alpha_1 z} + p_2 e^{\alpha_2 z}) \leq (n + 1)T(r, f) + S(r, f)$$

which implies $\rho(f) = 1$. Denoting $P_2(f) := q(z)f^{(k)}(qz + h)$ and differentiating Equation (1), we have

$$nf^{n-1}f' + P_2' = \alpha_1 p_1 e^{\alpha_1 z} + \alpha_2 p_2 e^{\alpha_2 z}. \quad (4)$$

Eliminating $e^{\alpha_2 z}$ from Equations (1) and (4) gives

$$\alpha_2 f^n - nf^{n-1}f' + \alpha_2 P_2 - P_2' = (\alpha_2 - \alpha_1)p_1 e^{\alpha_1 z} \quad (5)$$

Differentiating Equation (5) yields

$$n\alpha_2 f^{n-1}f' - n(n - 1)f^{n-2}(f')^2 - nf^{n-1}f'' + \alpha_2 P_2' - P_2'' = \alpha_1(\alpha_2 - \alpha_1)p_1 e^{\alpha_1 z} \quad (6)$$

It follows from Equations (5) and (6) that

$$f^{n-2}\varphi = Q,$$

where

$$\varphi = \alpha_1 \alpha_2 f^2 - n(\alpha_1 + \alpha_2)ff' + n(n - 1)(f')^2 + nff'' \quad (7)$$

and

$$Q = -\alpha_1 \alpha_2 P_2 + (\alpha_1 + \alpha_2)P_2' - P_2''.$$

Next we discuss two cases below.

Case 1. $\varphi \equiv 0$.

Dividing with f^2 on both sides in Equation (7) and recalling $\frac{f''}{f} = \left(\frac{f'}{f}\right)' + \left(\frac{f'}{f}\right)^2$, we get a Riccati equation

$$t' + nt^2 - (\alpha_1 + \alpha_2)t + \frac{\alpha_1 \alpha_2}{n} = 0$$

where $t = \frac{f'}{f}$. A routine computation yields two constant solutions $t_1 = \frac{\alpha_1}{n}$ and $t_2 = \frac{\alpha_2}{n}$.



Given that $t \neq t_1$ and $t \neq t_2$ hold, we have

$$\frac{1}{t_1 - t_2} \left(\frac{t'}{t - t_1} - \frac{t'}{t - t_2} \right) = -n$$

Integrating it on both sides gives

$$\ln \frac{t - t_1}{t - t_2} = n(t_2 - t_1)z + C, \quad C \in \mathbb{C}$$

which is equivalent to

$$\frac{t - t_1}{t - t_2} = e^{n(t_2 - t_1)z + C}.$$

It immediately yields

$$t = t_2 + \frac{t_2 - t_1}{e^{n(t_2 - t_1)z + C} - 1} = \frac{f'}{f}.$$

Note that zeros of $e^{n(t_2 - t_1)z + C} - 1$ are the zeros of f . If z_0 is a zero of f with multiplicity k , then

$$k = \text{Res} \left[\frac{f'}{f}, z_0 \right] = \text{Res} \left[t_2 + \frac{t_2 - t_1}{e^{n(t_2 - t_1)z + C} - 1}, z_0 \right] = \frac{1}{n}$$

is a contradiction.

If $t_1 = \frac{\alpha_1}{2}$, then $f(z) = c_1 e^{\frac{\alpha_1 z}{2}}$, where c_1 is a constant satisfying $c_1^2 = p_1$.

Similarly, if $t_2 = \frac{\alpha_2}{2}$, then we have $f(z) = c_2 e^{\frac{\alpha_2 z}{2}}$, where c_2 is a constant satisfying $c_2^2 = p_2$.

We obtain $f(z) = c_2 e^{\frac{\alpha_2 z}{n}}$, where c_2 is a constant satisfying $c_2^n = p_2$. Substituting these formulas into Equation (1), we have

$$q(z)c_2 \left(\frac{\alpha_2}{n} \right)^k e^{\frac{\alpha_2 h}{n}} e^{\frac{\alpha_2 z}{n}} - p_1 e^{\alpha_1 z} = 0.$$

According to $\alpha_1 \neq \alpha_2$ and Lemma 3, we have

$$\alpha_2 = n\alpha_1 \text{ and } q(z)c_2 \left(\frac{\alpha_2}{n} \right)^k e^{\frac{\alpha_2 h}{n}} = p_1$$

which implies that $q(z)$ is a constant.

Set $q = q(z)$.

Similarly, we proceed to obtain $f(z) = c_1 e^{\frac{\alpha_1 z}{n}}$, $qc_1 \left(\frac{\alpha_1}{n} \right)^k e^{\frac{\alpha_1 h}{n}} = p_2$, $\alpha_1 = n\alpha_2$ and $c_1^n = p_1$.

Case 2. $\varphi \not\equiv 0$. For $n \geq 4$, we shall derive a contradiction. In fact, Q is a difference-differential polynomial in f and its degree at most is 1. By Equation (i) and Lemma 4, we have $m(r, \varphi) = S(r, f)$ and $T(r, \varphi) = S(r, f)$. On the other hand, we can rewrite Equation (25) as $f^{n-3}(f\varphi) = Q$, which implies $m(r, f\varphi) = S(r, f)$ and $T(r, f\varphi) = S(r, f)$. If $\varphi \not\equiv 0$, then $T(r, f) = T\left(r, \frac{f\varphi}{\varphi}\right) = S(r, f)$ and this is impossible.

CONCLUSIONS:

In this study, we consider q -shift difference –differential equation and obtained the entire solution of Equation (1) if $\deg P(f) = n - 1$. Since the degree of $P(f)$ is bigger than $n - 2$, one cannot use Clunie's lemma which is a key in the proof. It is very difficult to resolve the question. Chen and Gao[11] considered the entire solution f with the order $\rho(f) < \infty$ and $N(r, 1/f) = S(r, f)$ when $n = 2$ and partially answered the question. We remove the condition that the order $\rho(f) < \infty$ by a different method and improve the result of Chen and Gao[11]. The research was motivated by Theorem A, a question to be raised is how to find the existence of solutions to Equation (1) if $e^{\lambda z}$ and $e^{-\lambda z}$ can be replaced by a linear combination of $e^{\alpha_1 z}$ and $e^{\alpha_2 z}$ for two distinct constants α_1 and α_2 . We consider the general case by the similar method and give the solutions of Equation (1).

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LEGAL LITERACY AS A TOOL FOR BRINGING ENVIRONMENTAL AWARENESS

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Abstract: *Proper environment is that important element without which it is not possible to exist upon this Globe. Since our birth to death, we are dependent upon the proper environmental conditions. So, it should be the responsibility of each and every person to aware to preserve the suitable environmental conditions. Through the Constitutional and legal provisions, we are given some rights and duties through which it will be easy to get the proper environmental conditions. But due to lack of legal literacy till now it is not possible to take the benefits of those legal and Constitutional provisions, that is why preservation of healthy environment is not in the attitude of the mass group of people Through Legal literacy it will be possible to earn information which are essential to get a healthy environment. It is very regretting to say that till now most of the Indian citizens have no little bit of knowledge regarding the value of environmental condition. That is why it is very essential to spread the knowledge regarding the value of the importance of environmental condition and it will be possible only through legal literacy. So, if large number of citizens are aware regarding available rules, regulations for the protection of the environmental conditions, then it will be possible to save our natural environment. That is why legal literacy is one of the important tools to bring legal awareness.*

Key Words: *Environment, Legal Literacy, Constitutional Provision, Legal Provision, Environmental Awareness.*

INTRODUCTION:

Environment is that important factor due to which it is possible to survive each and every creature upon this Globe. Proper environmental conditions are the basic part relating to the life of a living creatures from the birth till death. We are born, brought up and complete our life cycles in the lap of mother nature, it is nothing but due to availability of that environment which is needful to live a dignified life. Healthy environment always provides us a healthy life. So, it should be the responsibility of the whole human race to be sensitive for the management of the healthy environment. To find out a healthy environment, whole human race should have to take the attitude in their mind that how it will be possible to preserve the environmental conditions. The Government of India is very actively working for the management of the proper environmental conditions by passing various types of legislations, Governmental rules, regulations, programmes etc. In spite of the availability of these satisfactory initiatives, till now environmental awareness is not possible in our society. Mass groups of people are totally ignorant regarding the meaning of environment and its value in their life and as a result of which it is not possible to find out a healthy environmental condition.

THE RELEVANCE OF THE PRESENT STUDY:

Proper environmental condition is the unavoidable part of human civilization. Without proper environmental condition life of each and every creature upon this Globe is not possible. At present, preservation of the suitable environmental conditions is very challenging before the whole World but then also violation against our natural environment is in large numbers. For the removal of such types of violations, Indian Constitution is very sensitive through its various types of Articles, for the protection of our natural environment and on the other hand Indian legislators are very serious in passing of various legal enactments to gift the Indian people a healthy environmental condition. Right to healthy environment- is one of the fundamental rights of Indian citizens. So, as it is a fundamental right to each and every Indian citizen that is why they can challenge the activities of another person who commit any kind of violation regarding our natural environment .On the other- hand it is mentionable that to get the benefits of these legal and Constitutional regulations, legal literacy is very important through which people able to get better



information regarding the preservation of proper environment. By observing the value of environment, the present study is very relevant to find out how legal literacy is essential to bring awareness about the environmental condition.

THEORITICAL FRAMEWORK OF THE STUDY:

The Theories relating to environmental awareness had been developed by the United Nations Conference held in Stockholm, Sweden in the year 1972. To bring world- wide environmental awareness was the basic concern of the various principles of that conference. The aims and objectives of the various theoretical values relating to the concept of the environmental awareness is very active in India through the Constitutional and legal provisions. It is mentionable that the Part-iv, of the Constitution of India is available with the provisions of Fundamental Duties which have to be followed by the citizens of India for the preservation of the proper natural environmental conditions. Legislations like-The Water (Prevention and Control of Pollution) Act, 1974, in 1986, the Indian legislators passed The Environment (Protection) Act, which is a full-fledged piece of legislation to combat every kind of environmental issues in India by imposing some responsibilities upon the citizens of India and to bring environmental awareness among the all categories of citizens of India to save and protect the natural environment. To take the benefits of these legal provisions legal literacy is that means which can help them to get the proper information of these legal safeguards, which are essentials for the preservation of the proper environmental conditions.

MEANING OF LEGAL LITERACY:

Legal literacy is that important part of our education which provides us information and knowledge regarding available legal safeguards and benefits. It is very relevant to say that legal literacy is that tool which can bring legal awareness in case of violation of environmental rights. Problems relating to environmental condition is not a problem available in a particular region, among particular groups of people-it is the problems relating to the whole world. That is why the problem relating to the management of the proper environmental condition is the problem relating to all civilized nation of the world. For the preservation of the proper environmental condition International and National level perspectives are very sensitive. It is here referable that legal literacy makes people informative regarding each and every strategy relating to environmental protections.

RELATION BETWEENLEGAL LITERACY AND ENVIRONMENTAL AWARENESS:

At present environmental awareness is one of the primary concerns of the maximum number of civilized nations. To bring proper environmental awareness in the whole world various types of International and National level programmes and policies are there. The first- International conference relating to human environment relationship which had been held in Stockholm, Sweden in the year 1972 from 5th to 16th June, 1972 tried to bring environmental awareness among the whole human race and it was the main theme of that declaration to provide information regarding the relationship between the human race and the environmental condition. Another very important step had been taken in international level was through the establishment of the Brundtl and Commission by the initiative of the United Nations general assembly in the year 1983 and this Commission had been submitted its report in the year 1987 by taking the heading as OUR COMMON FUTURE. The main significance of the report was to bring mass awareness regarding environment and sustainable development to provide some valuable suggestions, through which it will be possible to save our natural environment for the present and for the coming generations. Through suggestions the COMMISSION imposed some duties upon the Developed countries towards developing and under-developed countries to provide their helping hand regarding the growth of sound economic condition. The Commission considered that the proper economic condition is the main weapon to save the environment and environmental resources. If a nation is economically sound then it will be success in implementation of various types of effective policies through which it will be possible to bring human resource development. As the problem relating to environment is our common problem that is why it should be the responsibility of all developed countries to provide helping hand towards the developing and under developed countries to earn a suitable environment. Through its recommendations it has been suggested that as the problems relating to environment is the problem relating to the whole world that is why by this heading emphasis had been given to bring awareness in each and every part of the Globe. After the Stockholm Declaration various types of International Convention had been held for example in the year 1992, U.N. Conference in Environment and Development at Rio de Janeiro held in Brazil. Through this conference new Global partnership had been started for the proper implementation of the sustainable development concept. As India was also a participatory nation of the Stockholm declaration under the guideship of then Prime Minister of India Late Indira Gandhi and after that successful participation various types of environmental related legislations had been passed to enforce right to environment as a legally protective rights and in this way our state, India marched towards the environmental awareness.



LITERATURE REVIEW:

Koszegi, M.; Bottlik, Z.; Telbisz, T. Mari, L. (2015) Human-environment relationships in modern and postmodern geography:

“The real breakthrough in human-environment research ensued in the 1990s, when the idea that humans have an influence on recent climate change was accepted (Coombes, P. and Barber, K. 2005). The environmental protection movements appeared first in the United States in the 1960s and 1970s and gradually gained political support to study these questions and increased research activities in these fields (Harden, C.P. 2012). The global climate change discourse received geopolitical importance and turned the attention to the fragile relation of humans and their environment.”(Kőszegi et al., 2015). The authors discuss about the environmental protection movement and their relevancy. The crucial issue of climate change has been mentioned in the article.

OBJECTIVES OF THE STUDY:

- To highlight the value of natural environment.
- To analyse Legal Literacy and Environmental Literacy.
- To analyze the relationship between human person and natural environment.
- To analyze the role of legal literacy in bringing environmental awareness.
- To recommend the strategies or solutions to grow environmental awareness among the all categories of person in our society

METHODOLOGY:

The study is analytical. It is based on secondary sources only. The materials are collected from various books, journals, magazines, internet etc. The author’s personal views are also included.

DISCUSSION:

Legal literacy as a tool for bringing environmental awareness can be described as- legal literacy is performing pivotal role to make people aware regarding proper environmental condition by giving them information regarding available legal and Constitutional protections which are unavoidable for the survival of each and every creature upon this Globe. The Constitution of India is very active in bringing environmental awareness among all Indians through its various types of Articles which are basically related with for the preservation of suitable environmental conditions and some of those can be mentioned as below:

- Article 21: Right to life is the basic theme of this article 21. Right to life is one of the fundamental rights that is why each and every Indian citizen have right to live in a healthy and suitable environment. That is why nobody has authority to create disturbance regarding our natural environment.
- Article 51-A(g): As the Constitution of India provides some environmental rights to its citizens and in opposite it is available with imposition of fundamental duties upon its citizens that is why each and every Indian citizen is duty bound for the protection and improvement of the natural environment.

Here it is mentionable that in-availability of these Constitutional provisions, the Indian legislators had passed various types of legal provisions specially relating to environmental awareness and through these legislative provisions people can challenge for the preservation of their right relating to environment. Some of those legislations can be described as below:

- 1) THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT, 1974: With the development of science and technology, industrial development is increasing day by day and with this, the concept of urbanization is also increasing that is why chance of possibility regarding water pollution is also increasing. By studying these social movement, it had been realized that statutory guidelines are very important for the preservation of the natural resources like- water resources are very important. To provide statutory guidelines regarding preservation of the water resources our legislators had passed this legislation.
- 2) THE AIR (PREVENTION AND CONTROL OF POLLUTION) ACT, 1981: This important legislation had been passed to maintain the quality of air and to control of air pollution.
- 3) THE ENVIRONMENT (PROTECTION) ACT, 1986: This full-fledged piece of environmental legislation had been passed to protect and improve natural environment and to bring mass awareness among people regarding environment.

For the proper use and utility of these environmental legislation legal literacy is very important and through which it will be possible to get the benefits of legal and Constitutional provisions which are available to provide environmental safe guards.

**FINDINGS:**

As it is a very common picture that due to lack of legal literacy till now it is not possible to find out all-round social awareness regarding the protection and preservation of the environmental condition which is always highlighted through various types of social media and internet, etc. Due to this lack of awareness whole human race and all other creatures available upon this Globe is facing various types of problems. Some of those can be mentioned as below-

- **Global Warming:** With the passage of time and due to the demand of the modern civilization, the burning of fossil fuels, emissions from automobiles and chlorofluorocarbons add to the greenhouse gases in the atmosphere. Due to which the temperature of the earth is increasing day by day. This problem is not related to a particular region, it is the problem available upon the whole Globe and increase in temperature across the Globe is known as Global warming.
- **Water Pollution:** Due to over population, industrialization, etc. the introduction of harmful substances into rivers, seas, ponds etc. are increasing rapidly. These are some of the factors which changes the physical, chemical or biological condition of water is known as water pollution. This kind of polluted water is not suitable to any life. As water is the main source of life and therefore it is our foremost responsibility to prevent water pollution.
- **Role of Government:** Though Indian Government is very actively working for the preservation of our proper environmental conditions by passing through various types of rules, regulations but then also till now there is no satisfactory result regarding these matters. Lack of proper implementation mechanisms is one of the responsible factors for the degradation of the environmental condition.

ANALYSIS AND INTERPRETATION:

Through the findings it can be remarked that inspite of the availability of the special rules and regulations there is non availability of the proper awareness relating to preservation of the natural environment, in the attitude of the maximum number of human persons there is no sensitiveness regarding the management of proper environment. As a result of that environmental related problems are increasing day by day and with reference to these observations, some major causes can be cited as below:

- Preservation of the healthy environment is not taken as the primary responsibility within the State activities.
- Due to lack of legal literacy, people are not aware regarding legal and Constitutional provisions which are essentials for earning healthy environment and that is the one of the main factor that maximum people are not aware regarding the available national and international mandates to provide a safe and secured environmental conditions.
- Rights to healthy environment is one of the fundamental rights for each and every citizen of India but due to lack of legal literacy till now there is non availability of awareness regarding healthy environment that is why while people are experiencing any kind of violation regarding the concept of healthy environment then maximum groups of people are remain silent.

SOME MEASURES TO BE FOLLOWED:

As the healthy environment is the primary element for the survival of living creatures upon this Globe, environmental awareness should be the primary concern in most of the civilized nations of the world. But it is a very true fact that till now maximum number of people are unaware regarding maintenance of proper environmental conditions. This is the main causes of experiencing various types of new problems by the human civilization. Various types of skin diseases, reproduction problems, extinction of various types of species- are some of the problems which are facing by the human civilization and these problems are nothing but due to degradation of the healthy environmental conditions. For the removal of these problems legal literacy is very essential through which it will be possible to bring environmental awareness. On the basis of this present study, the following measures can be mentioned as the helpful measures to bring environmental awareness among the mass group of people-

- Government should take initiatives to provide the information about the value of environment through- publications, poster, advertisement etc. to bring environmental awareness among all levels of people and it is one of the foremost duties of our government to spread the value of legal literacy.
- Environmental education should be included from the level of primary education to bring environmental awareness right from the childhood stage of our life. Then it will be possible to find out the value of environment in the beginning stage of the learner and as a result of which they will be taking it as their duty for the protection of the suitable environmental condition.



- Through the arrangement of counseling center, Government can spread the value of the environment in the life of each and every category of people then it will be possible to bring environmental awareness in the root level of our society.

ARRANGEMENT OF AWARENESS PROGRAMMES:

Till now it is not possible to get a social environment where each and every inhabitant are available with sufficient means of education which is essential to know the environmental conditions where they are living. Proper education is that means which helped people to earn the value of legal literacy. Legal literacy is that possible means which is essential to get information regarding the available legal provisions for the preservation of the healthy environmental condition. For that reason, arrangement of environmental awareness programmes is very necessary to bring sensitiveness among the mass groups of people regarding the management of suitable environmental condition. So, the main theme of these environmental awareness programmes- seminars, workshops should be based on-

- To sensitize all categories of the people of our society, to provide information which are available to safeguard the natural environment without which life is impossible upon this Globe.
- To bring awareness from the root level of our society regarding the value of legal literacy, use and utility of legal literacy, through which it is possible to remove problems, relating to proper environmental conditions.

CONCLUSION:

Awareness relating to preservation of natural environment should be the primary concern of each and every civilized nation of the world. All most all civilized nations of the world are very sensitive regarding the management of healthy environmental condition that is the main reason of the participation of the large number of nations from the worldwide in various types of national and international convention. It is nothing but the availability of the environmental awareness programmes inspires those nations to make participation over those, International, conventions. On the other- hand for the success of available National and International policies, legal literacy is very important, through which people will be well-informative regarding the available legal strategies. Then only mass awareness will be possible to take the benefits of the environmental protective legal regulations, which is very essential to bring satisfactory awareness regarding preservation of the natural environment. To find out the fruitful results regarding the available Constitutional and legal measures, the Government of India is strictly following the legal literacy programmes in all over India through- National Legal Services Authority-in National level, State Legal Services Authority-in state level and District Services Authority- in District level. Here, it is mentionable that though the District Legal Services Authority is very actively working in the root level of our society to bring legal literacy awareness but till now maximum number of people are not available with little bit of information regarding the available legal benefits as a result of which inspite of the availability of the legal mechanisms in the field of environmental protection till now there is no positive result regarding environmental awareness. So, it can be remarked that perhaps, it is nothing but due to lack of legal literacy our society is not aware regarding the legal benefits available for the protection of our natural environment. At last, in conclusion, it can be remarked, that without legal literacy among mass groups of people environmental awareness is not possible.

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IMPACT OF KESARI AND MARATHI NEWS PAPERS ON MUMBAI KARNATAKA FREEDOM STRUGGLE

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Abstract: *Bal Gangadhar Tilak started news papers to convey peace and violent ways to the Indians for their independence against British rule and to express their views those newspapers gained national awareness among the people as weapons mainly affecting Mumbai Karnataka*

Key Words: *Associates , freedom struggle , News papers , Kesari, Marathi.*

INTRODUCTION

Bal Gangadhar Tilak initially started Kesari and Marathi newspapers with the help of his friends. The climate of British rule during that period was a cultivate species. Thus some Indian newspapers of the day were complaining against the British .petitions by protester thought appeals against the British administration were sufficient to the rectify the situation . At this time the Indians were ready and willing to do anything to gain independence . Bal. Gangadhar Tilak's was convinced India independence was possible only thought violent struggle. Declaring that the people should be prepared to raise the awareness of nationalism and independence he started the press to express his views to the people .Those newspapers quickly became public instruments and became effective weapons

Objectives :

- To know the role of news papers in Mumbai Karnataka
- To understand the impact of Tilak on Mumbai Karnataka at freedom struggle
- To understand thoughts on Swaraj
- Role of news papers in freedom struggle of Mumbai Karnataka

Background of Kesari and Marathi News Papers :

The Kesarinews paper in marati and Marathinews paper in English were started from Vishnu, Krushna, Chipalunakar at beggining. The Tilak's later took over therespossibility of these newspapers . The two newspapers were closely related to the Deccan education society . The Kesari introduction letter signed by Tilak Namjoshi Aste Agharakarand Dr J K Gard was issued in Oct 1800. The first issue of Kesari published on Jan 4 1881 was aimed at right and wrong in social reform and peoples way of life. In its first issue published on Jan 2 1881 Marathi newspapers criticized the British administrations effects farming practice and the government costly administration . Tilak Namajoshi and Agharakar founded the Deccan Education society in 1884 in 1890 the Tilak lost their association with the society Agarkar in 1888 disagreed on social and religious matter and two newspapers were floted with help of Kelkar and H N Gokale the Tilak fronted the newspapers . Since Kelkar left the paper in a few days Tilak's fully responsibility for the newspapers . Tilak's was inspired by Amrut Bazar and his founder editor Shashikumar Gosh Amrut Bazar newspaper . Initially Kesari learned to criticize the administration following the Amrut Bazar newspaper marati. The Kesari newspaper was by the nationalists of the powerful writers K P Khadilakar and N P Kelkar were Tilak's associates. Kesari has made an impact in various part of India . Tilak's writing in the Marathi and Kesari newspaper seemed to touch and impress the people mind . The headlines in Tilak newspaper were so fascinating and thrilled the minds of the people . "The sun was rising but where was the sun ?" "The darkness below the lamp " and " He was good at talking ". In the headlines in the Kesari newspaper attract the minds of the people as they wait for the Kesari newspaper.



IMPACT OF KESARI AND MARATHI NEWSPAPERS ON MUMBAI KARNATAKA FREEDOM STRUGGLE

British pursued a policy of smashing the unity of Karnataka . Area of Karnataka such as Bijapur , Dharwad, Belgaum and Uttar kannada are the part of Mumbai Karnataka . Raychur , Gulbarga, Bidar are part of Hydrabad Karnataka . South Kannada ,Ballary , Mysore , Bangalore the part province Madras . The southern part of Karnataka under the control of the Mysore Wadeyars. Kodagu was under the direct of the British . As a result of the Tilak's struggle the Mumbai Presidency took a impact turn . Tilak's Kesari and Marathi newspapers foster an independence and nationalistic atmosphere thought the article

KESARI NEWS PAPER

These passages, taken from an article by Kesari , reflect the mind Tilak . for the time , The Kesari newspaper reported the signs of afamine coming , expressing concern . for the first time, the kesarinews papers reported its apprehensions of a famine warning but there was no news in the government's report

In Dharwad Kannada newspapers such as Rajahamsa (1881) Karnataka (1880) Dhananjaya (1895) newspapers contributed to the national movement asserting nationalism and independence in the Tilak ideology 1905 and 1906 articles published in Kesari newspaper of inspired by the public motivated by nationalism opposed British rule .There have been protest in the city of Mumbai condemnig the British for plague . Tilak's articles echoed in this protest particularly in the national awakening especially with Kesari news paper

According to Alur Venkataraya a national movement was started in the country in 1985-1986 during the period . The established of the National assembly in Dharwad created awareness among the students thought newspapers

According to the annual report of Mumbai government Kesarinews paper was highest circulating newspaper in the Mumbai Karnataka region . The some report that he was criticized by this newspapers. Kesari is the most popular newspaper and name Kesari is used for newspapers in all languages. The kannada newspapers mostly followed the Kesari news papers

MARATHI NEWS PAPERS

The government was urged to address the hardship of the people following the famine relief bill. Published two articles on a weekly basis, The number of plague cases has increased day by day, with some articles about the disease being published by Marathi news paper, Tilak's Maratanews papers boosted the self confidence of the people and attracted the youth so that young people could learn marati a try to Marati newspapers were instrumental in promoting modern nationalism in the Mumbai Karnataka Tilak had traveled in Uttar Kannada and Uttar Kannada was a subscriber to his newspapers. The Kesarinews papers was so popular among the Sirsi, Siddapur, Shivamoga, and Malki that marati learners read the Kesari newspaper. The call from the Tilak was well recived in Vijayapur Srinivasarao of Vijayapura a follower of Tilak went around the corner and delivered the message of Tilak and his article to the people

CONCLUSION

The Tilak's are known for their loyalty and honest Tilak was regarded by the youth as his role model. He traveled to Karnataka with a determination to achivesovereign without making any compromises and agreements with nationalist Kesari and Marata newspapers led by Tilak's have played an important role in promoting nationalism especially on Mumbai Karnataka

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LOCAL RESOURCE ECONOMY AND KORAGA TRIBAL WOMEN IN COASTAL KARNATAKA

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Abstract: *Since the independence, India has made steady progress in economic and social development. This has led to considerable improvement in standards and quality of life of the people. One of the segments of the population, which particularly vulnerable tribal groups (PVTGs) are facing the problems of hunger, malnutrition, poverty, poor literacy, poor health facility and deprivation of natural resources and still remain outside the mainstream development. As per 2011 census, tribes are enumerated over 104 millions, constituting 8.6 per cent of the total population. There are seventy five PVTGs communities in India. Karnataka has 52 tribal groups out of which 2 are particularly vulnerable tribal groups (PVTGs). The Fifth Five Year plan when the concept of PVTGs was introduced by the government of India, a number of special development interventions are being extended for this vulnerable section through a specially set up Micro Projects for effective implementation and all round development of PVTGs. The present paper throws light on the glaring apathy of the PVTGs of Karnataka. The economy of the PVTGs is chiefly forest based and revolves around traditional sources. The PVTGs are landless, vulnerable and food insecure. The income level these communities are low and their source is also limited and unsustainable. Low literacy is rampant among these groups. The situation has turned all the more worse in recent years. This indicates that the more targeted policy frame work is needed to address the issues of these indigenous communities.*

Key Words: *PVTGs, food insecure, development, indigenous and landless.*

INTRODUCTION:

Tribal communities are one of the important segments of the nation. The main characteristics of all tribes are their tribal (indigenous) origin, primitive way of life, habitation in remote and less easily accessible areas and general backwardness in conventional developmental parameters. Scheduled Tribes (STs) who constitute around 8.6 per cent of the total population of the country. There are 705 STs living in different parts of the country. Majority of them live in scattered habitations located in interior, remote, and inaccessible hilly and forest areas of the country. 75 Tribes who have been identified as Primitive Tribal Group”(PTG, now called Particularly Vulnerable Group).Development is a gradual process of civilization. The purpose of development is to provide basic needs as well as to increase the opportunities to the entire citizen for a prosperous life. It is essential to bring out a more equitable distribution of income and wealth for promoting social justice and efficiency of production. In India, tribal rights are constitutionally preserved. The Constitution of India provides for a comprehensive framework for the socio-economic development of scheduled tribes and for preventing their exploitation by other groups of the society. The Koraga is an indigenous tribal community that is basically found mainly in the Dakshina Kannada, Udupi District of Karnataka and Kasaragod District of Kerala State. They are also found in small numbers in almost all districts of Karnataka. In Udupi district they are found in Udupi, Kundapura, Baindoor, Hebri, Brahmavara, Kaup and Karkala taluks and in Dakshina Kannada district they are found in seven taluks namely, Mangalore, Puttur, Sullia, Bantwal, Belthngady, Kadaba and Moodabidri. Mangalore is the headquarters of the district.

- In the first census report of 1871 ‘No Hill Tribes’
- In the 1881 Census report, they were recognised as ‘Aboriginals’.
- In the 1891 Census, Koragas were treated as 'Forest and Hill Tribes of South Canara'
- In the Census of 1921, 1931 and 1941 they were classified as 'Depressed Classes'.



- In the 1951 Census, they were classified as 'Scheduled Caste'.
- From the 1956 to 1986 Census report they were re-classified as 'Scheduled Tribes'.
- In 1986 they were classified as 'Primitive Tribal Groups'.
- In 2006, the Government of India renamed the PTGs as Particularly Vulnerable Groups (PVTGs)

“In Dakshina Kannada Koragas are considered as untouchables and the practice of social distance, keeping out of personal and social contract is followed in case of Koragas. Hence, Koragas are not allowed to mingle with others in any of the social functions as well as they are also not allowed to enter into places of worship. The persons who touch a Koraga are considered to carry the risk of impurity. Since the concept of untouchability has its roots in the ideas of purity and pollution it is the lifestyle of Koragas who used to eat dead animals and left-over foods that have forced others to keep themselves away from them”. Koraga Tribe is considered one of the most backward communities in South India. Their origin is a web of legend and history. Until recently Koragas were slaves, sold and bought along with land. As per the Scheduled Castes and Scheduled Tribes list Order 1956, the Koraga tribe is identified as ‘Scheduled Tribe’.

- According to Dakshina Kannada district, gazetteer gives the disruption of Koragas as thus “Koragas is a forest tribe, whose chief means of subsistence, however, is basket-making. It is perhaps owing to this fact and to the similarity of name that they have been said to be allied to the Koramas, Korachas, Koravas or Yerukalas, the well-known gipsy tribe of basket-makers and salt-carriers. The tribal is that a king called Habashika brought an army from Anantapur to Canara and the Koragar formed part of his forces. This army was at first victorious, but it was subsequently defeated and the Koragas were driven into the forests.” (Sturrock J, 1894).
- Lawrence D’Souza (1991:9-11) writes that “the Koragas once ruled South Canara District under a chief named Habashika. There are a few recorded legends which, although differing in details, connect the Koraga with the Habashika. According to Aiyappan a certain invaded Tuluva and conquered it from Mayura Varma, king of Vanavasi. Mayura Varna is the scholar of Kanchi who founded the Kadamba empire. Habashika was treacherously murdered after 12 years. The Kadambas now attacked Habashik’s followers, overthrew them and subjected them to slavery. The Koragas appeared to have accepted the slave’s position on condition that they are fed day after day without having to bother about the next day’s meal”. The reference to Habashika or Habashi perhaps also hints to their various cultural origins which seem to have varied with the Hindu caste of the area, especially the Kshatriyas and the Brahmin.
- The Koragas are reported with few sub-tribes or sub-divisions. However, the number and the subdivision names vary with different accounts available in the community.
- M.A. Sherring (1975) states that “the Koragas have three subdivisions and they are Ande Koragas, Vastra Koragas, and Soppu Koragas.” These classifications are named based on the different kinds of dresses worn by them. As per the above-mentioned sub-tribes, the following names have appeared are as follows:
- The Koragas have a variety of occupations like sweepers, performing the role of musicians (drummers), basketry, scavengers and flaying the skin of dead animals or similar other ‘so called’ dishonoured occupations. They also divide bamboos and make baskets and mats, work as labourers and sweep the streets and act as scavengers. According to Sturrock J (1894), basket making is one of the important means of community maintenance. He also confirmed that, in addition to basket making the members of the Koraga community work as drummers, scavengers, some collect the horns and hides of the dead animals. Edgar Thurston (1909) also mentioned their principal occupation as basket making and providing labour to their masters.
- The majority of the workers are working in the household industry, which in their case largely relates to the traditional sector of the economy. Basket weaving is mainly carried on by women groups, while men are seeking outside work. Alongside the household industry, the industrial category of agriculture labour accounts for a huge number of workers. But the majority of the workers in the agricultural sector are not happy with being labourers. A handful of workers were engaged in construction jobs such as mining, digging, drilling etc. and a few in commerce, trade, communication and storage.
- Until now, Koragas were made to carry night soil and hence they were called Thotties. Koragas have not been able to take up different occupations and are unable to stick to a particular occupation. Even now they are largely dependent on the traditional sector



RESEARCH METHODOLOGY:

This study took the economic aspects of the Koraga (PVTGs) community of Coastal Karnataka. The study has used both primary as well as secondary data. The primary data was collected through the structured questionnaire from the Koraga tribe. Secondary data was collected from books, Journals, Reports, Articles, Census Records, Districts Gazetteers for review of literature and profile of the study.

OBJECTIVES:

- To study the history of koraga tribe.
- To trace the resource economy of the koraga tribe.
- To discuss various issues relating to the traditional occupation and their development

Population of Koraga Tribes in D.K and Udupi Districts as per 2011 census:

Sl.No	Districts	Male	Female	Total population
1.	Dakshina Kannada	2465	2393	4858
2.	Udupi	5627	5506	11133
	Total			15991

Occupational Income Generated

The majority 248 (62%) of the Koraga community occupational income is generated from daily wage.72(18%) of them depending traditional occupations.

Occupational Income	Koraga
Traditional occupation	72 (18%)
Daily wage labour	248 (62%)
Minor forest product	Nil
Working in private sector	8 (2%)
Scavenging	72 (18%)
Working in own land	Nil
Total	400 (100%)

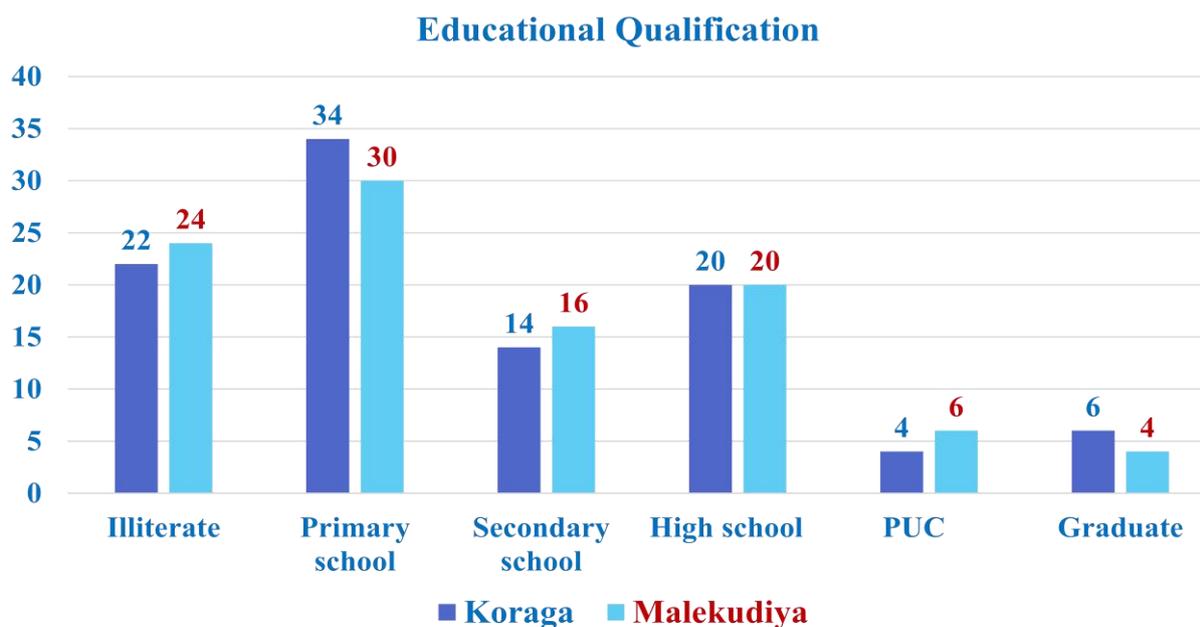
Details of Expenditure

Details of Expenditure	Koraga
Food	264
Children education	160
Health	176
Alcohol	232
Festivals	200
Birth and Death Ceremony	192



Marriage Ceremony	32
Total	1256
	1256/400
Multiple Response Rate (MRR)	3.14

Education Qualification shows that majority of respondents Koraga (34%) has completed only Primary school of education.



MAJOR FINDINGS AND SUGGESTIONS:

- The Koragas are landless, vulnerable and food insecure community. Their source of income is limited and unsustainable. Low literacy is rampant among these groups. The situation has turned all the more worse in recent years. This indicates that the more targeted policy frame work is needed to address the issues of these indigenous communities.
- Because of various problems and restrictions such as unavailability of raw materials, rapid industrialization and prohibition to enter into the forest area, Koraga community has lost their source of income as well as natural life. Therefore, the Government should provide basic livelihood facilities to this tribe to lead a better life and sustainable development.
- The forest dwellers of Scheduled Tribes are facing problems due to forest department officers and Forest Acts. Hence, the rights which the tribes are permitted to have in the forests should be clearly defined and monitored as an integral part of forests laws and regulations.
- In Karnataka, Koraga Tribe is declared as the primitive vulnerable tribal group. In this regard, they are unable to compete with other tribal communities of Dakshina Kannada district. So, Government and Private sectors should provide separate reservations for Koragas to achieve economic growth and employment opportunities, financial



assistance so that they can participate in various programmes which will enhance their talents, skill and knowledge.

CONCLUSIONS:

Particularly Vulnerable Tribal Groups (PVTGs) is growing nowadays. Though Koragas are native of coastal Karnataka and Kerala, their livelihood and dignity are being spoiled by the inhumane practice of Ajar and Untouchability. The main reason for the failure of welfare schemes for Koragas is due to the inadequate knowledge of their problems, requirements, and social-cultural values. The majority of them face a nomadic way of life, geographical isolation, distinct cultural identity, and social backwardness. No clear documentation and research has been made till today about their history. Lack of awareness of programmes, low self-motivation and isolation has made the Koragas inward-looking thoroughly and led to their socio-cultural separation.

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The Impact of skill Development on women Empowerment in India

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Abstract: This article explores the empowerment of women thorough Skill training and Vocational training Programmes. Gender equality and empowerment plays an important role in economic development. In India majority of women and men residing both in rural and urban are unskilled. However, more number of Women workers are unskilled Compared to men. And these unskilled women workers are working in informal Sectors facing many problems including lack of Skills. Most of the time they have to work in extremely low wages and without any job Security and Social Security benefits and working condition also unsatisfactory Hence time has come for women empowerment to remove barriers and gender disparities for developing their confidence and motivate them to acquire requisite skills. As women are integral part of our society women empowerment is a Central issue. Skill development and Vocational training is Key to Success which improves Productivity, employability and earning opportunities. It is bridge between job and workforce and one of the best tool to empower women. In this way government of India has taken many Skill development initiatives for women empowerment. This paper focused on Skill training for women empowerment and analyses the Skill training Challenges for women to attain employable Skills and Suggest Suitable Policy measures to improve employability and Productivity.

Key Words: Empowerment, Skill development, employment, Work force, Vocational training, Productivity, Social development, Economic development.

INTRODUCTION:

Women Empowerment means giving them freedom to live the way they want. It allows them to identify their skills, knowledge and abilities to make their own decisions. Women Play an important role in the development of family and society. In India from last few decades women are actively participating in various areas like education, art and culture, service sector, sports, politics, media and science and technology they form a substantial part of the workforce. But the working percentage rate of women in total labour force is declining. Large number of them are working in informal Sectors and they are unskilled. Most of the time they have to work in extremely low wages and without any job Security and Social Condition also unsatisfactory. For all these problems lack of Skills among women is one of the main reason. Hence women empowerment is important for women to identify themselves with self confidence and self-esteem. For the Socio- economic development of any society women empowerment is essential. Skill development is Key to Success which improves Productivity and earning opportunity. It is bridge between job and workforce and one of the best tool to empower women. In this way government of India has taken many Skill development initiatives to empower women. Basic need of empowering women is provide employable skills and ability in order to Shape up their overall personality and raise their status within the Society.

Study Aims:

Present study aims to focus on women empowerment through skill training and vocational training. Skill training increase employability skills and increase job opportunities among women workforce. Government has taken many skill training initiatives for women empowerment. Still result is not satisfactory. So the study aims to focus on such skill training challenges and suggested remedial measures.

OBJECTIVES:

- To examine the importance of Skill development on women empowerment.
- To study skill training initiatives of government of India.
- To focus the challenges in development of skills among women.
- To suggest policy measures to improve employability of the women workers.



LITERATURE REVIEW:

Sathiabama (2010) Studied about the empowerment of rural women through entrepreneurship and highlighted the advantages of entrepreneurship among rural women.
 Palaneeshwari and Saikala (2012) Discussed about women should Participate in all sectors of work and Society should also provide many more opportunities to women. Finally concluded with society should have positive attitude towards women.
 Vijaya and Lokhandha (2013) highlighted importance of skill and vocational training for women empowerment with high Productivity and earnings.
 Kittur Praveen (2014) Suggested that in order to encourage women empowerment a special skill training is necessary to improve their skills and ability.
 Mamta Mokta (2014) Studied women should motivated for growth and development of herself And society should support her and provide opportunities in all sectors of work.

METHODOLOGY:

The proposed study mainly is descriptive in nature. It is based on secondary source of data and information which is collected from the related sources as per need of the research. The relevant journals, articles, books and documents of various ministries and websites are used in the study.

DISCUSSION, ANALYSIS AND RESULTS:

Concept of Women Empowerment: Women empowerment is deeply rooted in the globally determined and accepted goals of equality, development of peace for all. Women’s economic empowerment is highly connected with poverty reduction as women are drivers of the social and economic well-being of their families. Now a women has shifted from kitchen to professional field and women have taken entry into various organized as well as unorganized sectors but results are not satisfactory. According to census 2011 women population in India is 586.47 million which is 48.5% of total population. But Contribution from Indian women to National GDP is 17% .

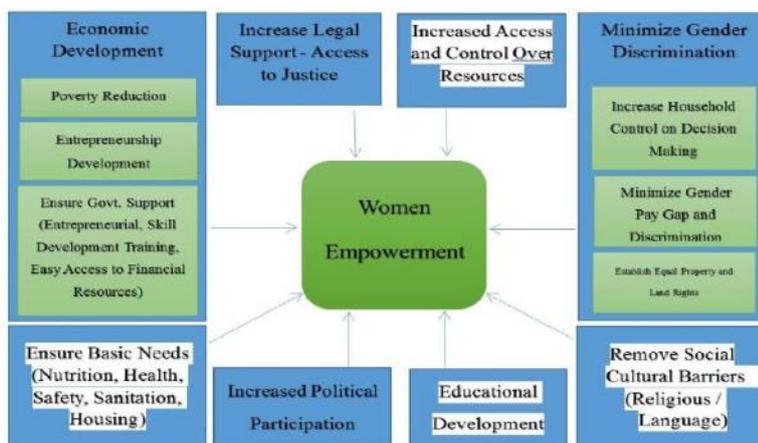


Figure 1: Women Empowerment

The above figure explains the scenario of women empowerment and its advantages for society and economy as well. Women empowerment helps in Economic development of country.as it increase productivity and revenue it helps to reduce poverty. And it develops entrepreneurship quality among women and increase household control on decision making and also minimize gender discrimination.

Women Empowerment in India:

Within the framework of politic Plans and Programmes government has aimed at women advancement in different Spheres. From the fifth five-year plan (1974-78) on wards there has been a remarkable shift in the approach to women’s issue from welfare to development and then from eighth five-year plan emphasis was shifted from development to empowerment. And 2001 was declared as the year of women’s empowerment (swashakti) and also government of India formed the National Policy for the empowerment of women. The national mission for empowerment of women (NMEW) was launched by government of India with the aim to strengthen and promote all

round development of women. Main Strategies of NMEW is invest in skill and entrepreneurship development, Micro credit and vocational training for economic empowerment of women.



Figure 2: Levels of Women Empowerment

The above figure shows how skill training helps in women empowerment both in individual level and collective level. In individual level it increase self-image, self-confidence, self-esteem and self-respect. In collective level takes overall control of their lives.

Skill development for women empowerment in India:

Women are considered as integral part of society they have shown their ability in community and economy development. They are participating in various sectors but large number of them are working in informal sectors due to lack of technical skills and employability skills. To increase the role of women in workforce government has taken many initiatives. Skill India mission launched on 15th July 2015 and government of India introduced National policy on Skill Development which has been formulated by the Ministry of Labour and Employment. The objective is to crest a work force empowered with improved skill, knowledge and internationally recognized qualification to gain access to decent employment. It aims at increase in productivity of workforce both in the organized and unorganized sectors male and female, rural and urban traditional and contemporary work place. It also recognized the need of skills for women in sustainable development of country. There is a need in providing skill training specially for women who are no less than men and empowering women Socially economically and educationally, Politically and legally is important for social –economic development of women and country as well.

Skill Development initiatives for women empowerment in India:

Vocational Training: Women’s Vocational training programme (WVTP) was designed and launched in 1977 to mainstream women into economic activities. Women’s vocational training programmes provide vocational training for women for wage employment in industry as instructors and also promote their self-employment ability.

The program offers:

- Industrial skill training under craftsmen training scheme (CTS)
- Instructor skill training under craft instructors training scheme (CITS)
- Demand driven short-term courses.
- Special programmes for training the instructors of ITIs.
- Tailor made courses as per industry demand.

Skill training programmes under CTS and CITS are

- Office Management
- Electronics
- Architecture
- Computer
- Dress making
- Cosmetology
- Fruits & Vegetables processing
- Desk top publishing
- Surface ornamentation Techniques
- Fashion design & Technology
- Catering & Hospitality
- Sewing Technology
- Food Production



- Computers aided embroidery & Designing

Long term skill Development Training via Industrial Training Institutes (ITIs): Through a wide network of 15,042 ITIs Spanning the Country over 22.82 lakh candidates have been enrolled and special focus is laid on enrolment of women. 18 National skill training institutes (for women) are imparting skill training exclusively for women. Further exclusive batches to provide basic theoretical training to women have been started under national apprenticeship promotion scheme in all centrally funded institutes.

Short term skill development training: The flagship programme of the ministry Pradan Mantri Kushalya Vikas Yojana strives to promote increased participation of women in the work force through appropriate skilling and gender mainstreaming of skills close to 50% of the candidates enrolled and trained under PMKVY are women out of the total 56 lakh candidates who have benefited from the scheme.

Recognition of Prior Learning (RPL): Under the recognition of prior learning more than 4 lakh women candidates have been oriented in different skill areas. Recognizing their existing skills through a formal certificate and giving them a means to earn better livelihood.

Special Women –Centric Projects: NSDC through its training partner such as Mann Deshi foundation, Shri mahila sewa Sahakari bank limited and working exclusively on skill development of women especially in rural areas. The training constitutes importing digital accounting and entrepreneurial skill so as to facilitate the possible of setting up their own business.

A partnership with private and Non-Government Organizations to boost skills development: Under PMKVY Project Amrita vishwa vidyapeetham is targeting remote villages for women empowerment through skill development and Creation of occupational opportunities.

Projects in Pradhan Mantri Mahila Koushal Kendra (PMMKK): Recently more than 6000 training target have been allowed to train women in 4 PMMKs. Training is being conducted for Self employment occupations like Tailoring, Beauty Therapist, Yoga trainer, Customer care executives etc.

Entrepreneurial Initiatives: MSDE is committed to facilitate growth of women entrepreneur in the country.

Future jobs and industry oriented Courses: There are nearly 450 job roles which are concentrated towards skill training of women. Skill India is encouraging participation of women in new age job roles, aligned to industry 4.0 such as artificial intelligence, 3D printing and data analysis.

Policy Interventions: The national skill development policy focuses on inclusive skill development with the objective of increased women participation for better economic development.

RESULTS: The Study has found that the government and its agency partners have undertaken various measures, initiatives for the effective implementation of the skill development system for woman. Skill development highly impacted women empowerment. It increased the employability skills of women. And changed the image of women workforce.

- Skill development helped women to shift from unorganized sector to organized sector. Employment of women in organized sector has increased by 12%.
- Skill development helped women to shift from manual labours to desk jobs. Skill training courses provide soft skills, computer literacy and communication skills which helped them to work in front desk jobs.
- Skill development training provides training for self-employment of woman. Majority of women have started their own business with good level of income. Government is providing loan in low interest rates which is helping in women empowerment.
- Skill development initiatives has increased number of women entrepreneurs in all sectors.
- Majority of the women have captured the market of garment making, handembroidery, fabric painting, zardosi work, beauty parlor, health and wellness centers, yoga and fitness dance training.

CHALLENGES FOR WOMEN IN ATTAINING SKILLS: Even after proper training and skill training initiatives many are not getting proper jobs due to following reasons:

- Illiteracy
- Lack of family support
- Dual Responsibility
- Gender discriminating in wages
- Inadequate Infrastructure
- Finance Problem
- Discriminatory social customs and traditions



- Limited hours available for training and work
- Low social value in attached to girls education.
- Poor quality of training
- Low level of education of women trainees
- Too much competition for gender bias.
- Along with this, women safety is again continuous issue which pulls women back.

MAJOR SUGGESTIONS: India is the largest and fastest growing country, but the reality is that it still lags behind as compared to other in terms of accessibility of skills to women. there are many suggestions to improve the situation are

- Need for gender Sensitive Training and Policy
- Up gradation of the craftsmen training scheme
- Provision of vocational training in schools
- Making use of private sector
- Changes at attitude level of the society
- Identification and upgradation of skills
- Support service beyond training
- Need for accessible and afford training
- Channelizing training through the local institutes
- Expand training institutes in remote areas with employment opportunities for sustainable development.
- Digital platforms can be used for women empowerment.

CONCLUSION:

The main aim of skill training, vocational training is not only to provide the skills to cope with the written words in everyday life but to enable them to gain greater freedom, to make choice to have a better grasp of the real life to enhance personal liberty and to have other sources of knowledge. Skill training for women empowerment is grate weapon for all economic problems like unemployment, illiteracy and poverty. It makes women economically and socially Strong and same time builds confidence and self esteem. There is a need for developing gender responsive strategies for skill development for women who are no less than men. It is believed that the Government of India has been showing adequate attention on skilling the women as per world standards. Separate ministry for skill development and entrepreneurship schemes dearly gave the priory for skill development in India. The study found that three is a challenging of skilling 500 million workforce by 2022 and 33% of them will be kept for women Hence a Strong Leadership is needed to fill this figure and planners should focus on women specific polices for their effective participation in the employment market. Thorough this women empowerment in India will takes place in satisfactory level.

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Structural and Morphological studies on $\text{Co}_x\text{Sr}_{1-x}\text{Fe}_2\text{O}_4$ Nano Ferrites

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Abstract: Nanoscale $\text{Co}_x\text{Sr}_{1-x}\text{Fe}_2\text{O}_4$ (Cobalt Stransium nano ferrite) particles were prepared by combustion method using cobalt stransium nitrate as oxidizer and urea as a fuel. The composition is characterized by X-ray diffraction technique (XRD) using Cu-K α radiation. The XRD study shows the nanocrystalline nature in the prepared ferrite samples. The crystal size is calculated from XRD data by using Scherrer equation and also tested the SEM micrographs.

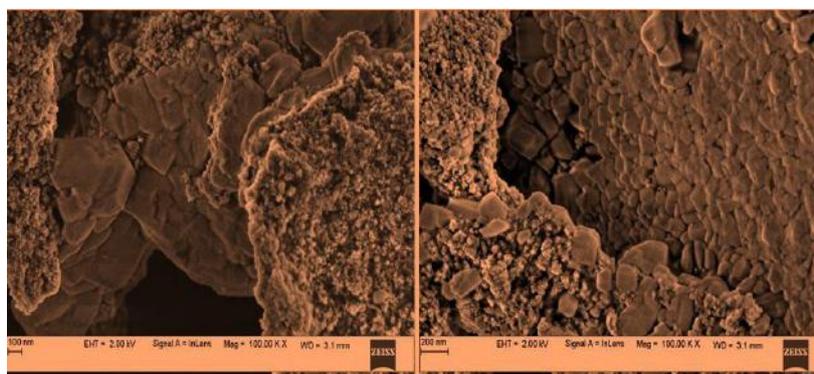


Figure: SEM micrographs of $\text{Co}_x\text{Sr}_{1-x}\text{Fe}_2\text{O}_3$ nanocomposites.

Key Words: Nanoferrite, XRD, SEM.

INTRODUCTION:

Nanotechnology, shortened to "nanotech", is the study of the controlling of matter on an atomic and molecular scale. Generally, nanotechnology deals with structures of the size 100 nanometers or smaller in at least one dimension, and involves developing materials or devices within that size. Nanotechnology is very diverse, ranging from extensions of conventional device physics to completely new approaches based upon molecular self-assembly, from developing new materials with dimensions on the nanoscale to investigating whether we can directly control matter on the atomic scale [13-14]. Nanotechnology has the potential to create many new materials and devices with a vast range of applications, such as in medicine, electronics and energy production. On the other hand, nanotechnology raises many of the same issues as with any introduction of new technology, including concerns about the toxicity and environmental impact of nanomaterials and their potential effects on global economics [1].

CHARACTERIZATION:

The X-ray diffraction patterns of the synthesized samples were recorded using Analytical X-Pert Pro MPD instrument. The samples were analyzed in the 2θ range of $10-80^\circ$, with a scanning speed of $5^\circ/\text{min}$ and step size of 0.02° .

The morphological analysis of the synthesized samples were performed using the FESEM CARL ZEISS instrument. This microscope is equipped with a field emission gun, operating with accelerating voltage variable from 0.5 to 30 kV, with 2 nm resolution.



The thermal analysis was carried out TA-SDT Q600 instrument under dry nitrogen atmosphere at the flow rate of 100mL/min. The samples were heated from room temperature to 700 °C at a heating rate of 20 °C min⁻¹. The TGA and DTG were carried out in nitrogen with the flow rate of 100 mL⁻¹.

X-Ray Diffraction Studies on as prepared CuZnFe₂O₄ and CoZnFe₂O₄ Nano Ferrites:

Structural analysis of the CuZnFe₂O₄ and CoZnFe₂O₄ Nano Ferrites samples has been performed using the powder XRD patterns and is presented in Fig. 1a&b. The XRD peaks (111), (022), (113), (222), (004), (224), (333), and (044) indicate that the prepared sample has a single-phase spinel cubic structure. The other prepared samples have partial formation of secondary hematite phase with spinel-phase cubic structure. In the reported literature, it has been found that the Co-Zn ferrite nanoparticles prepared using a sol gel method and annealed below 600 °C have single-phase **Fig. 2** XRD spectra of CuZnFe₂O₄ and CoZnFe₂O₄ Nano Ferrites spinel structure [2, 3]. The diffraction peaks have good agreement with standard JCPDS card nos. 52-0277 and 89-0599 corresponding to spinel Co-Zn ferrite and secondary hematite phase, respectively. The peak intensity of secondary hematite phase and it also found that secondary phase diminished at high concentration of cobalt doping. The average crystallite size of all prepared samples has been calculated from full width at half maximum (FWHM) of most prominent peak (113) of XRD patterns using Scherer's [4]. $D = 0.9\lambda/\beta \cos \theta$ where D is the average crystallite size, β is the FWHM of the peak intensity measured in radians, $\lambda = 1.54 \text{ \AA}$ is the wavelength of X-ray, and θ is Bragg's angle. It is found that crystallite size (D) increases with cobalt doping from 25 to 31 nm. The crystallite size (D) obtained at $x = 0.5\%$ (28 nm) and $x = 0.5\%$ (30 nm) is nearly the same. Also, other calculated structural parameters at $x = 0.03$ and 0.09 possess approximately the same values by virtue of this small dopant variation. Hence, the calculated crystallite size (D). The effect of Co doping on structural parameters includes d spacing (d) [5-6] and lattice constant (a) [7] that have been calculated using the following relations: $2d \sin \theta = n\lambda$.

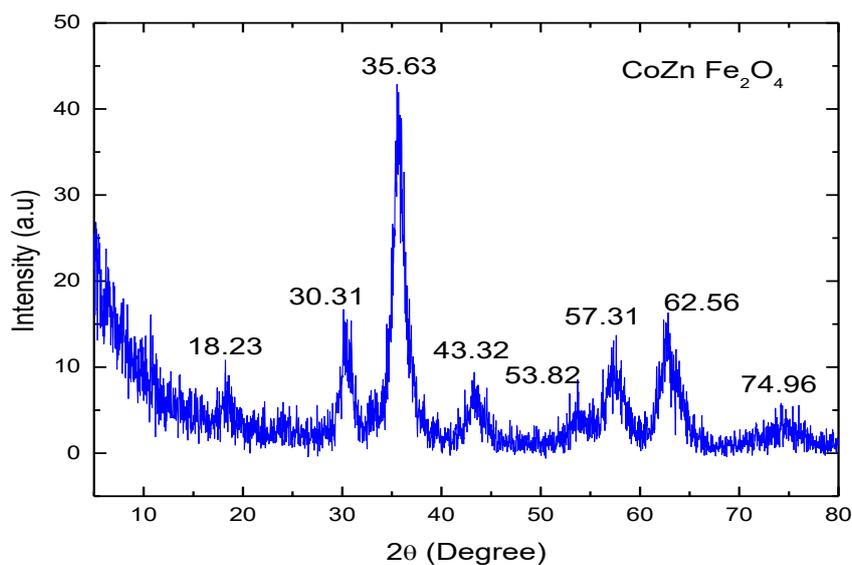


Figure 1. CoZnFe₂O₄ Nanocomposite

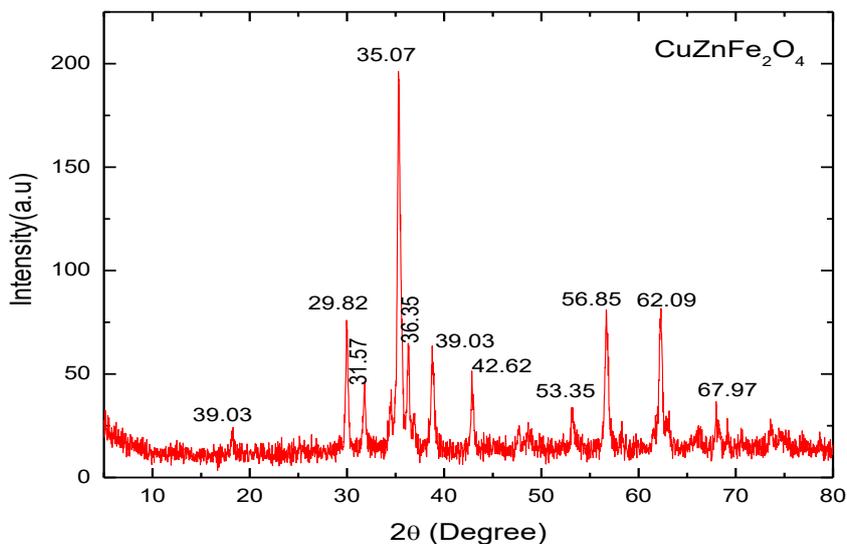
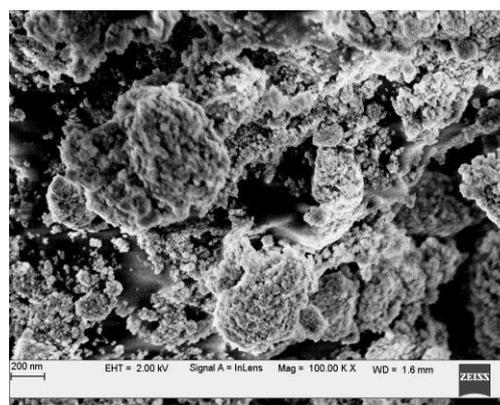
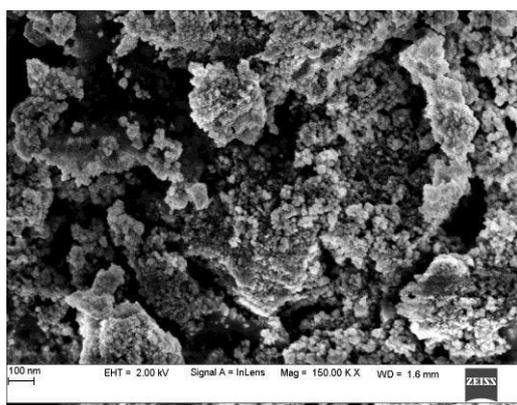


Figure.2. CuZnFe₂O₄

FESEM Analysis:

Figure 3 shows the SEM images of CuZnFe₂O₄ and CoZnFe₂O₄ Nano Ferrites synthesized powder dried at 90 °C in vacuum (Fig. 5a) and calcined at 500 °C for 45 min (Fig. 3b), respectively. In Fig. 3a, it is seen that agglomeration of crystals takes place. Usually, agglomeration is formed by smaller size of crystals. There are vary large number of spherical crystals with much smaller size i.e., nanometer dimensions below 100 nm. This agrees well with XRD pattern where peak broadening appeared for these powder specimens. The fine particles and their agglomerates are clearly seen in the SEM image [8-10].

However, after the heat treatment at 500 °C, the crystal size increases and the grain size was measured from SEM micrograph (Fig. 3b). This value is in agreement with the results obtained from XRD data where sharp peaks are the indication of well define crystallization of CuZnFe₂O₄ and CoZnFe₂O₄ Nano Ferrites. The XRD peaks are very narrow indicating the higher grain size falls beyond the nano-scale region. SEM microstructures of CuZnFe₂O₄ and CoZnFe₂O₄ Nano Ferrites specimens sintered at 500 °C are shown in Fig. 3c–d, respectively. The effect of heat treatment (500 °C) on specimens morphology are very obvious from the low resolution micrographs, the specimens have small grains (Fig. 3c). The effect of these partial melting causes dramatic changes in impedance results [10-12].



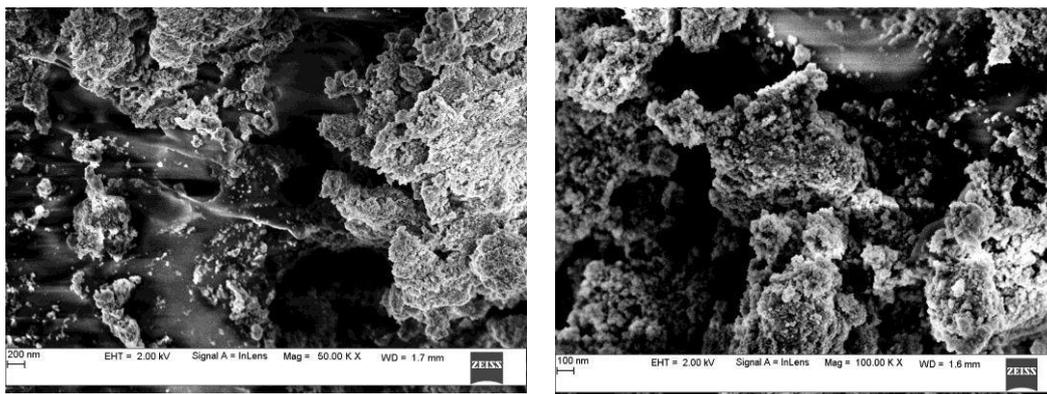


Figure 3: FESEM micrograph of $\text{CoZnFe}_2\text{O}_4$ Nanocomposite

CONCLUSIONS:

The present study demonstrated the structural, chemical and thermal properties of $\text{CuZnFe}_2\text{O}_4$ and $\text{CoZnFe}_2\text{O}_4$ Nano Ferrite synthesized using a solution combustion method. Significant results obtained are summarized below: As-prepared samples were examined by using XRD, FE-SEM analysis techniques. XRD study revealed that samples have single phase spinel cubic structure. There is partial formation of secondary hematite phase ($\alpha\text{-Fe}_2\text{O}_3$) with spinel phase cubic structure of $\text{CuZnFe}_2\text{O}_4$ and $\text{CoZnFe}_2\text{O}_4$ Nano Ferrites. The crystallite size (D) increases with Co and Cu because of larger ionic radii of Co^{2+} ions as compared to Cu^{2+} ions. The crystallinity of prepared samples increases and has been investigated by FESEM.

Conflict of Interest

The authors declare that they have no competing interests.

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“Women Contribution to Indian Economy: A Special Reference in Agriculture”

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Abstract: Agriculture is main occupation in India, and more than 60% of population are engaged in agriculture. In this women contribution was increasing women had 18493231 area of total land holdings based on 2015-16 agricultural census in that 15879512 are individual holdings and 2613719 are joint land holdings. (2015-16 Agricultural census). Study objective are to understand the women Trend in agriculture in India. Analysis the wage difference between men and women in India. Hypothesis are Women working in agriculture increasing in India. There is no Difference in Women wage and men Wage. secondary data collected through different agricultural census of 1995-96 to 2015-16 agricultural census, census of India 2011 and 2001, and ILO. Simple statistical tools are used those are percentage, Growth Rate, etc. also line graph and charts are used in this study. Result and Discussion Shows Population are equally distributed in India in the 1991 census to 2011 census in their male are population are slightly more compared to female. Agricultural Labourers are highly distributed 59.1% compared to agricultural cultivators 35.1% in the year 2011 census. Female marginal agricultural land holding is more 4.121 growth rate but small female land holding is -0.4415 based on 1995-2015 agricultural census. Wage rate of female are had 262.0rs and male are had 330.0 rs in India in the year 2018. Andhra Pradesh and Gujarat are moderately increasing female operational holding. Concluded So female is exploited to wage related problems and also she worked more in India.

Key Words: Women, Agriculture, Gender discrimination.

INTRODUCTION:

Women is playing important Role in primary sector, weeding, harvesting, processing, are most agricultural work done by women. Women are exploited in agricultural sector. (Krishna Rao 2006) and (TC Satyavati et al 2010). In the 1995-96 agricultural census females are had 11715782 area of total land holding in this individual and joint area of land holding are 10435065 and 1280717 respectively. women had 18493231 area of total land holdings based on 2015-16 agricultural census in that 15879512 are individual holdings and 2613719 are joint land holdings. (2015-16 Agricultural census)

Study aims:

This study mail focused on women working mechanism in agriculture. And women working capacity of women in India but Women are expiated of gender discrimination those are low wage, more work, women work in agriculture also cooking, etc. This study main aim to understand the women contribution in agriculture in India.

OBJECTIVE:

- To understand the women Trend in agriculture in India.
- Analysis the wage difference between men and women in India.

LITERATURE REVIEW: METHODOLOGY:

This study Focused on women working capacity in Agriculture in India. The study based on only secondary data, and secondary data collected through different agricultural census of 1995-96 to 2015-16 agricultural census, census of India 2011 and 2001, and ILO. Simple statistical tools are used those are percentage, Growth Rate, etc. also line graph and charts are used in this study.



HYPOTHESIS:

- Women working in agriculture increasing in India.
- There is no Difference in Women wage and men Wage.

DISCUSSION & ANALYSIS:

Women are main important role paly in Indian Economy, and contribute formally and informally to Indian economy. Female are more important strength of every family in these women involved primary, secondary, and treasury sector in India. This study focused on only agriculture sector and analysis her contribution and exploitation regarding women in India.

Table:1 Census Wise Population:

Census	Total Population	Male Population	Females Population	Male Percentage	Female Percentage
1901	23,83,96,327	65,82,105	11,73,58,672	50.41	49.22
1911	25,20,93,390	68,27,801	12,37,08,022	50.48	49.07
1921	25,13,21,213	67,93,718	12,27,74,988	50.78	48.85
1931	27,89,77,238	74,45,458	13,57,88,921	50.88	48.67
1941	31,86,60,580	82,94,043	15,46,90,267	51.02	48.54
1951	36,10,88,090	98,66,923	17,55,59,628	50.85	48.61
1961	43,92,34,771	1,20,40,923	21,29,41,570	51.04	48.48
1971	54,81,59,652	1,49,71,900	26,41,10,376	51.10	48.18
1981	68,33,29,097	1,89,22,627	32,99,54,637	50.95	48.28
1991	84,64,21,039	2,29,51,917	40,70,62,599	51.03	48.09
2001	1,02,87,37,436	2,68,98,918	49,65,14,346	50.89	48.26
2011	1,21,08,54,977	3,09,66,657	58,75,84,719	50.99	48.99

Sources: Census of India.

Table 1 Explain census wise population in India. Male and female population are distributed based on census up to 1901-2011. Male and female population are equally distribution but Male population was slightly more compare to female.

Table :2 Female Working Participation in India 1961-2011.

Census	Female agricultural working Participate	Agricultural cultivator	Female agricultural labourers
1961	27.9	-	-
1971	14.2	-	-
1981	19.7	14.8	20.8
1991	22.7	21.5	28.2
2001	25.7	25.2	49.5
2011	25.5	35.1	59.1

Sources: census in India.

Table 2 Explain the female working participation and women agriculture cultivator and women agricultural labourers details. Female agriculture working participation was 27.9 in the year1961 next decade it was tremendously decries. After that it was increasing at present 25.5 percent female are participate in agricultural work. Agricultural labourers are more 59.1 percent compared to agricultural cultivators 35.1 percent in the year 2011 census.

Table:3 Area of Female Land Holding by Different Size Group.

Size of Holdings	Marginal	Small	Semi medium	Medium	Large
1995-96	2683564	2687685	2839901	2449329	1055301



2000-01	3240257	3288067	3256782	2585961	1001895
2005-06	3757861	3621007	3574588	2796986	1017316
2010-11	4548521	4218352	3864048	2833539	1045116
2015-16	524024	4812517	4353438	3078294	1034956
Growth Rate	4.121070791	-0.441521973	-0.347664765	-0.204322589	0.019657841

Sources: agricultural census in India.

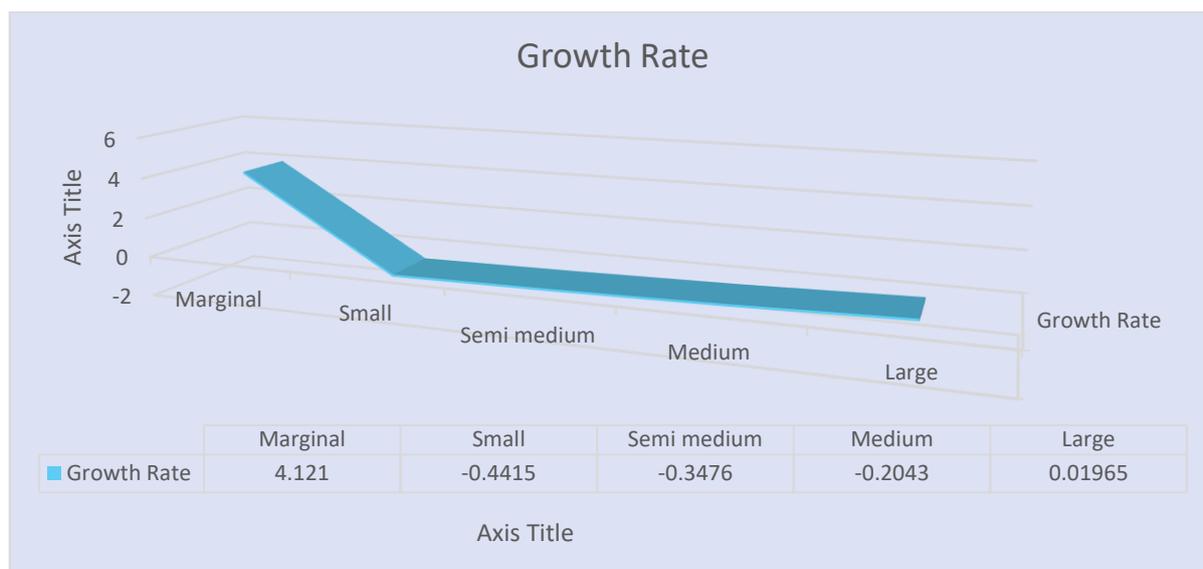


Table 3 and Figure 1 Explain the Growth rate of female land holding by different size group of land up to 1995-96 agricultural census to 2015-16 agricultural census. In this figure shows marginal agricultural land holding are more 4.121 growth rate but small female land holding is -0.4415 based on 1995-2015 agricultural census.

Table:4 Annual Average of Agricultural Wage in India.

Year	Male	Female
2010-11	147.7	115.02
2011-12	180.70	135.67
2012-13	213.71	164.57
2013-14	229.12	178.82
2014-15	268.00	204.00
2015-16	281.32	217.76
2016-17	295.00	230.00
2017-18	315.00	244.00
2018-19	330.00	262.00

Sources: ILO

Table 4 shows the Gender wise annual average of agricultural wage in India. Male agricultural wage rate is more compared to female 147.7 male and 115.02 are female agricultural wage but it was increasing wage rate in the year 2018-19 in this also female are had 262.0rs and male are had330.0 rs in India.

Table:5 State Wise Female Operational Holding.

States	2010-11	2015-16
Andhra Pradesh	1933	2180
Arunachal Pradesh	31	38
Assam	71	53
Bihar	849	893



Chhattisgarh	503	553
Goa	15	14
Gujarat	1305	1589
Haryana	405	491
Himachal Pradesh	45	47
Jammu& Kashmir	48	238
Jharkhand	259	2102
Karnataka	1898	221
Kerala	210	1509
Madhya Pradesh	1204	2884
Maharashtra	2585	8
Manipur	5	84
Meghalaya	97	11
Mizoram	10	54
Nagaland	93	169
Odisha	148	43
Punjab	26	1654
Rajasthan	1329	5
Sikkim	4	1036
Tamil Nadu	1056	1337
Telangana	1212	29
Tripura	25	1011
Uttar Pradesh	948	71
Uttarakhand	68	103
West Bengal	6110	6

Sources: agricultural census 2015-16.

Figure:2State Wise Female Operational Holding.

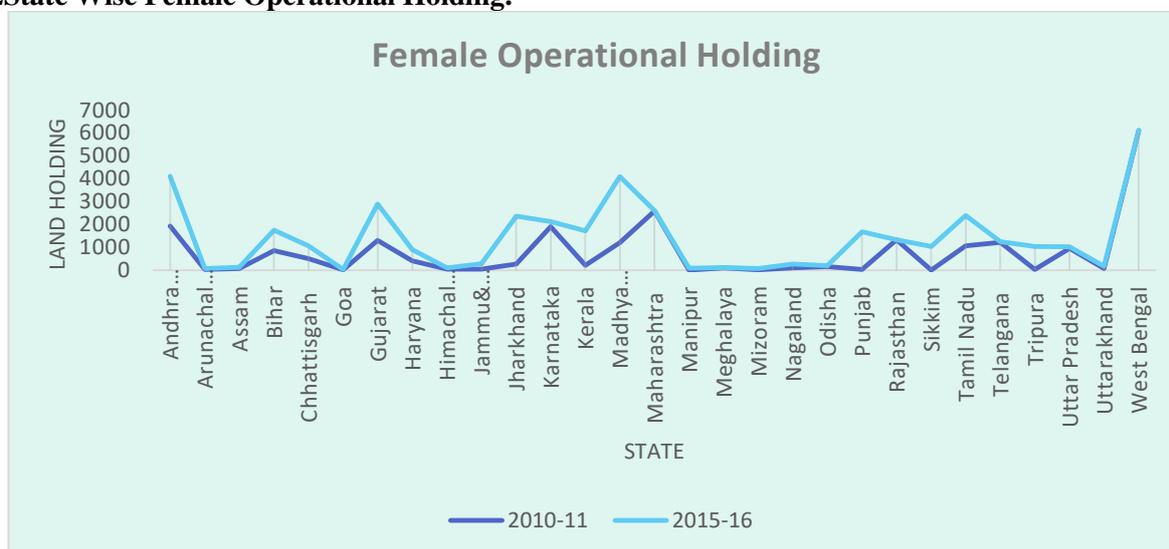


Table 5 and figure 2 explained West Bengal had 6110 operational female holding. In the year 2010-11 and 2884 female operational holdings in Madhya Pradesh. Sikkim had lowest female operational holding in the year 2010-11, and West Bengal had 6 female operational holdings. Andhra Pradesh and Gujarat are moderately increasing female operational holding.

RESULTS:

- Population are equally distributed in India in the 1991 census to 2011 census in their male are population are slightly more compared to female.



- Agricultural Labourers are highly distributed 59.1% compared to agricultural cultivators 35.1% in the year 2011 census.
- Female marginal agricultural land holding are more 4.121 growth rate but small female land holding is - 0.4415 based on 1995-2015 agricultural census.
- Wage rate of female are had 262.0rs and male are had 330.0 rs in India in the year 2018.
- Andra Pradesh and Gujarat are moderately increasing female operational holding.

CONCLUSION:

Female are main role playing in agriculture in India. Agricultural labourers are high compared to agricultural cultivators in India. And male agricultural wage is more compared to female. So female is exploited to wage related problems and also she worked more in India.

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Gender Disparity in Karnataka: A Special Reference to Education

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Abstract: *Young you educate a man: you educate a man. You educate a Woman: you educate a generation. Brigham Today gender inequalities in social and economic domains are still remained deep and persistent across India. Inequality or disparities between men and women in population growth, literacy level, sex ratio, workforce and political participation and economic status is very much evident when these two genders are compared. In this paper, an attempt is made to analyse the prevalence of gender disparities in Karnataka using education as an indicators, based on the secondary data. It was observed that the gender based disparities have remained the most prevalent across districts and the State. The study found that Men education level is higher than women; urban populations are more educated than the rural population, Urban women and men education level is greater than rural women and men education and Men and women literacy rate is always higher than Karnataka average literacy rate in urban area. There is a need to promote education, training and professional development for women, and we should promote rural education men as well as women.*

Key Words: *Men and Women, Rural and Urban, Education.*

INTRODUCTION:

Education is an essential part of a living being, whether it is a boy or a girl. Education helps an individual to be smarter, to learn new things and to know about the facts around the world. Especially women education in India is the need of the hour. In terms of inhabitants, India is the second largest nation in the world but the rate of girl education in India is extremely low. Educating the girl child must be a necessity for the overall development of the country as women plays a necessary part in the all-around process of the country. Generally, in rural areas, where people rarely want to send their daughters to school, they think that education is not a key for girls as they grow up and eventually get married and settle down. People think that girls should be stay at home mothers to help their family and nothing else. This mentality is completely wrong and since girl education can bring around a massive revolution in the society, as lack of women education weakens the potent part of the society. There are many NGO's that are serving for this problem, but the most trustworthy one is CARE India. With the launch of their program Girl's Education Programme (GEP) that focuses on improving the condition by which girls, especially in rural areas can access quality education. There are several advantages of developing female education in India, since education can play an important role in the development of the country. Gender inequality continues to be a persistent phenomenon in India and today women are lagging behind men in work involvement, asset possessions, socio-Economic status, employment opportunities and resource accessibility. Education is a human right for women and men. Education is a cornerstone of economic development and has benefits for national health, social and political stability, democracy, etc. Education is crucial for achievement of the Millennium Development Goals in health, education, social equality, etc...

OBJECTIVE OF THE STUDY:

- To study the trends and patterns of education status in Karnataka.
- To analyze the education disparities in men and women in Rural and Urban area.

METHODOLOGY:

This paper is quantitative in nature. The secondary information is used for the analysis of the study problem. The secondary data were collected from the various sources like special Books, Census Reports of Karnataka, etc. and study period from 1951 to 2011. statistical tools used percentage.



REVIEW OF EARLIER LITERATURE:

Many faces of Gender Disparity’ as illustrated that mortality inequality, natality inequality, basic facility inequality, special opportunity inequality, professional inequality, ownership inequality and household inequality is facing women in many different gender disparity in the present situation (Sen., Amartya 2001). According to the census report of India, there is constantly declining of sex ratio, lower literacy rate of females than males and lower participation of women than men in the work force. With respect to Karnataka shows the inequalities between male and female in many indices. Gender disparities in sex ratio, wage differentials, health, education and various dimensions are still prevalent in the State. Education for All (EFA) Goal 5: Eliminating gender disparities in primary and secondary education by 2005, and achieving gender equality in education by 2015, with a focus on ensuring girls’ full and equal access to and achievement in basic education of good quality (Dakar Framework for Action, 2000). Millennium Development Goals (MDG) Goal 3: Promote gender equality and empower women Target 4: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015 (Millennium Summit).

GENDER IN EQUALITY IN KARNATAKA:

Promote gender equality: Gender equality continues to be a prevalent issue in today’s society due to the persistent gap in terms of access to opportunities for women and men. Gender equality is a fundamental human right that every human being is entitled to regardless of their race, ethnicity, sexuality or religion. The role men and women play in the society are totally determined and as a result there is a gender gap.

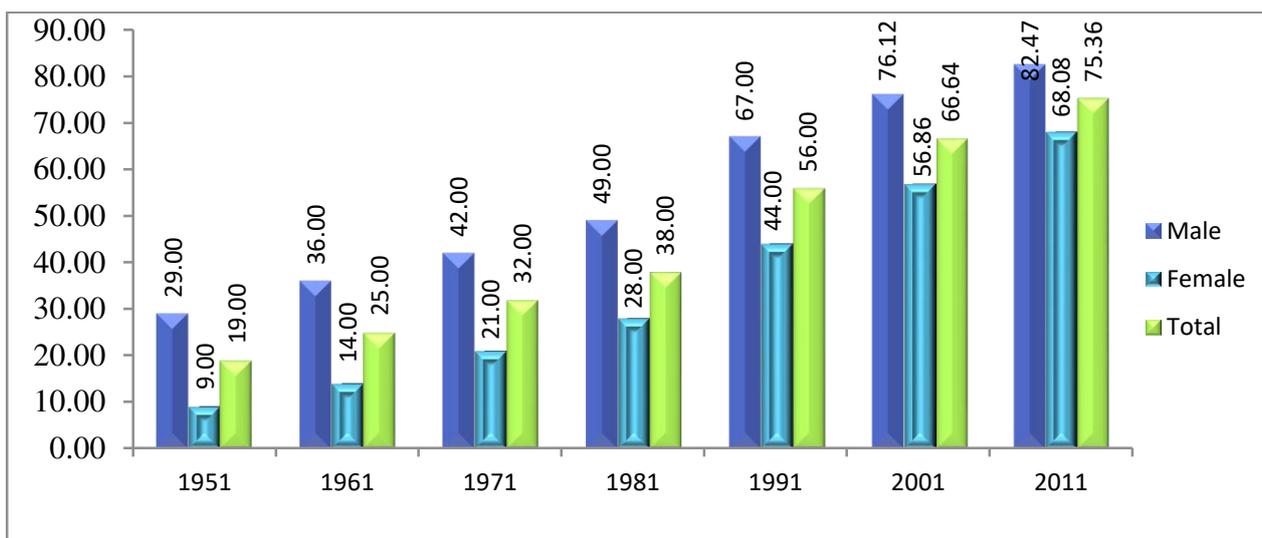


Figure 1: Gender wise Literacy rate of Karnataka from 1951 to 2011 (in percentage).

Source: Population Census of Karnataka from 1951 to 2011.

Above figure shows that disparity of education among gender wise in Karnataka, as we know that in Karnataka population share is almost equal apart from population everything not equal best example is education. Over a period of time educational gap is 20 per cent compare to men, means female getting education is very less. Male people getting education is increasing more than over all people getting education in last 3 decades. It shows that ignoring female education and improving male education.

Table 1: Rural and Urban Area Covered Literacy Rate by Gender wise in Karnataka from 1951 to 2011 (in percentage).

Year	Rural			Urban			Total		
	Male	Female	Persons	Male	Female	Persons	Male	Female	Persons
1951	24.00	5.00	14.00	47.00	23.00	35.00	29.00	9.00	19.00
1961	-	-	20.00	-	-	44.00	36.00	14.00	25.00
1971	35.00	15.00	25.00	60.00	42.00	51.00	42.00	21.00	32.00
1981	42.00	20.00	31.00	65.00	48.00	57.00	49.00	28.00	38.00



1991	60.00	35.00	48.00	82.00	66.00	74.00	67.00	44.00	56.00
2001	70.47	48.01	59.34	86.65	74.08	80.55	76.12	56.86	66.64
2011	77.61	59.71	68.73	90.04	81.36	85.78	82.47	68.08	75.36

Source: Population Census of Karnataka from 1951 to 2011.

Above table shows that percentage shared by Rural Urban area covered under literacy rate among male and female in Karnataka from 1951 to 2011 census. Literacy rate is very low compare to urban. High gender literacy inequity found in the rural area and urban area over period of time in Karnataka.

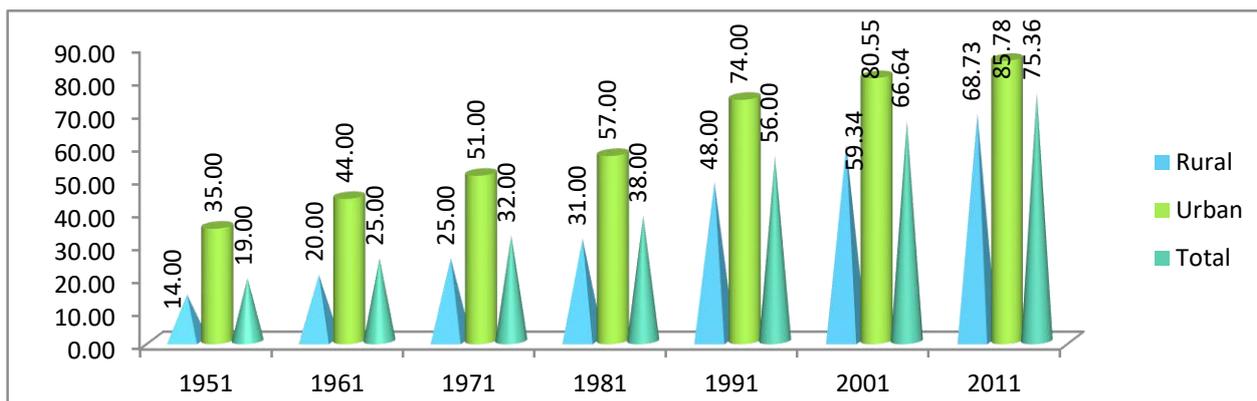


Figure 2: Rural and Urban wise Literacy Rate in Karnataka from 1951 to 2011 (in percentage).

Source: Population Census of Karnataka from 1951 to 2011.

Above figure sharing that literacy rate shared by rural urban and overall population from 1951 to 2011. We see that above table rural area is neglected by education from 1951 to 2011 literacy rate is increasing all area but urban literacy is increasing very fast. A person of rural area awareness importance of education and getting education is very slow. Below table 2 shows that literacy rate shared by all districts of Karnataka as per 2011 census, below table showing a result regarding gender wise area wise like rural and urban district wise literacy rate of overall persons in Karnataka. Male literacy is very high compare to female literacy and over all persons who are educated in district wise of Karnataka state. Although Male education performance is good and high in Rural and Urban area compare to female literacy performance.

Table no 2. Rural and Urban Area Covered Gender wise and District wise Literacy of Karnataka as per 2011 Census (in percentage).

Year : 2011		Rural			Urban			Total		
Sl.No	District	Male	Female	Persons	Male	Female	Persons	Male	Female	Persons
1	Bagalkot	75.77	52.58	64.2	86.55	70.65	78.58	79.23	58.4	68.82
2	Bengaluru Urban	84.54	70.92	78.21	91.66	85.27	88.61	91.01	84.01	87.67
3	Bengaluru Rural	83.06	66.8	75.16	89.57	80.95	85.37	84.82	70.63	77.93
4	Ramanagara	73.96	56.36	65.26	85.47	77.51	81.54	76.76	61.5	69.22
5	Belagavi	79.12	59.2	69.28	91.1	79.95	85.56	82.2	64.58	73.48
6	Bellari	72.42	51.02	61.81	83.58	69.62	76.63	76.64	58.09	67.43
7	Bidar	76.28	56.82	66.73	87.42	75.88	81.81	79.09	61.55	70.51
8	Vijayapura	74.03	51.1	62.81	87.8	74.79	81.33	77.21	56.72	67.15
9	Chamarajnar	64.8	51.06	57.95	83.29	73.54	78.39	67.93	54.92	61.43
10	Chikmagalur	83.82	70.15	76.95	91.4	84.51	87.93	85.41	73.16	79.25
11	Chitradurga	79.19	61.91	70.68	90.22	81.55	85.89	81.37	65.88	73.71
12	Dakshina	90.97	79.83	85.33	95.5	88.83	92.12	93.13	84.13	88.57



	Kannada									
13	Davanagere	79.63	63.69	71.77	88.19	79.77	84.02	82.4	68.91	75.74
14	Dharwad	80.98	62.72	72.09	90.49	81.31	85.92	86.37	73.46	80
15	Gadag	82.83	60.62	71.86	88.01	73.92	80.94	84.66	65.44	75.12
16	Kalaburagi	69.08	46.86	58.09	85.12	71.91	78.61	74.38	55.09	64.85
17	Yadagiri	58.02	36.05	47.05	80.03	63.92	72.01	62.25	41.38	51.83
18	Hassan	81.41	64.29	72.79	91.94	84.81	88.36	83.64	68.6	76.07
19	Haveri	83.05	67.89	75.69	87.39	79.29	83.39	84	70.46	77.4
20	Kodagu	85.94	76.37	81.09	94.41	88.58	91.48	87.19	78.14	82.61
21	Kolar	78.11	59.82	69.08	90.05	82.18	86.13	81.81	66.84	74.39
22	Chikkaballapura	75.41	57.1	66.39	86.01	77.06	81.57	77.75	61.55	69.76
23	Koppal	77.12	54.85	66.05	85.48	70.59	78.03	78.54	57.55	68.09
24	Mandya	76.34	59.21	67.78	87.78	78.75	83.24	78.27	62.54	70.4
25	Mysuru	70.64	55.78	63.29	89.5	82.67	86.09	78.46	67.06	72.79
26	Raichur	66.01	42.37	54.11	83.1	67.1	75.12	70.47	48.73	59.56
27	Shivamogga	83.14	69.6	76.37	91.35	84.24	87.79	86.07	74.84	80.45
28	Tumakuru	80.48	62.71	71.66	90.93	83.67	87.32	82.81	67.38	75.14
29	Udupi	89.85	78.65	83.91	95.22	89.21	92.13	91.41	81.58	86.24
30	Uttara Kannada	87.63	74.87	81.31	94.49	86.91	90.73	89.63	78.39	84.06
KARNATAKA		77.61	59.71	68.73	90.04	81.36	85.78	82.47	68.08	75.36

Source: Population Census of Karnataka 2011.

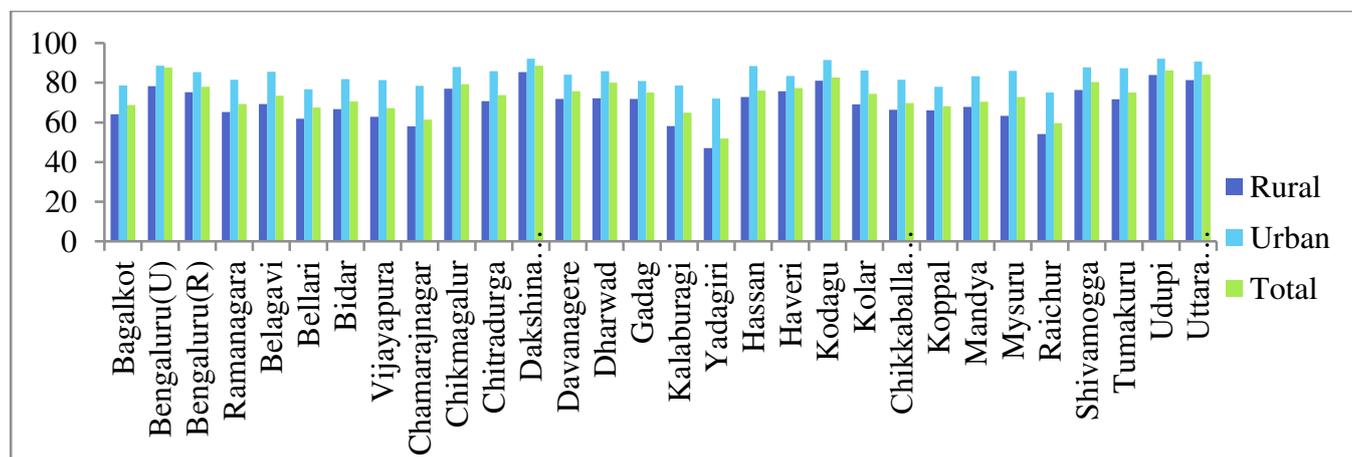


Figure 3: Rural and Urban wise Literacy Rate of Districts of Karnataka 2011 (in percentage).

Source: Population Census of Karnataka 2011.

Above figure 3 shows literacy rate of rural and urban area people. Urban people are more educated greater than rural people and the overall Karnataka average among all districts.

ERADICATION MEASURES OF INEQUALITY BETWEEN MEN AND WOMEN:

Women are disadvantaged absolutely and relative to men in terms of access to education, resources and employment. Prevalence of disparities across gender is a reality in contemporary society despite many initiatives. The gender wise population growth, literacy level, sex ratio, working participation and political reservation and economic status is very low among women than men. To properly address these issues, effective inclusive policies are required to reduce gender disparity gap through active participation in economic, social and political spheres. To achieve



gender equality in child sex ratio, it requires awareness and understanding among parents as female children are equal to male children. Concerted efforts are needed to emphasize the value of girls and women and to promote equality among sexes.

CONCLUSION:

We always found that there is big gap between man and women. There is a need to fill that gap. Socio-Economic and political discrimination is always existing. Education is very important to economic development in India as well as Karnataka. As well as women education is main stream to welfare of the society. If women educated the whole generation will be educated. When men and women will get equal education than gender inequality will reduce. If education performance increases it leads to their courage to involving in the economic and political activities, education gives more employment opportunities it leads to improve the Standard of living it will help to GDP. Through education we can eradicate the inequality in women and men and also achieve the women empowerment.

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“SURVEY OF INSECT DIVERSITY IN AND AROUND KARNATAK UNIVERSITY CAMPUS, DHARWAD”

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Abstract: The study was conducted on insect diversity in and around Karnataka university Dharwad ,from August 2018 to February 2019.The survey included four sites: Mango plantation, Pond ecosystem and Agricultural habitat on the order Coleoptera. A total of 17 species were identified, which belongs to 6 families. The Shannon diversity index with 2.409. gave highest species richness from the Mango plantation (13species).

Key Words: Insects, Diversity, Coleoptera, Collection, Karnataka University Dharwad, Shannon diversity index, Simpson's dominance index.

INTRODUCTION:

Biological diversity is one of the fascinating aspects of biology. Biodiversity encompasses functioning, intact plant and animal communities and the processes that affects them. Evolution by natural selection has produce and is still producing different species. The term biodiversity was coined by Wilson (1988). Out of all described animal species more than 75% of animals are insects only. About 750,000 insects are comprised and exhibit not only a rich variety of form, colour and shape but also a range of ecological adaptations unexcelled by any group (Cheng, 1976). In an old estimate Lefroy and Howlett (1909) the monumental book “Indian insect life” reported 25,700 indian species. Indian insects belong to 27 orders of which Coleopterans dominated with about 15,500 species. Butterflies and moths of about 15,000 species is another important group these are followed by Hymenoptera (10,000 species), Diptera (6093 species) and Hemiptera (6500 species), (Varshney, 1998).Nandini and Murali (2012) carried out a preliminary study on the abundance and diversity of insect's species in agriculture fields of Hadgil Harutti village, Gulbarga district, Karnataka, aimed to determine the species richness, dominance and evenness of insect's fauna from agriculture field. A total of 11,318 insects belonging to 6 orders, 26 families and 54 species were recorded. They reported Hymenoptera (78.86%) was the most dominant order followed by Coleoptera (15.45%), Lepidoptera (3.22%), Hemiptera (1.47%), Orthoptera (0.95%) and Diptera (0.05%).

Study aim: To explore the existing insect diversity of 3 different ecosystems on Order Coleoptera, hence the present study was undertaken to study insect diversity in and around Karnataka University Dharwad.

OBJECTIVES:

Preliminary survey on insect diversity in and around Karnatak University Campus, Dharwad so as to record and identify insect species from 3different sites/Ecosystems such as;

1. Mango Plantation
2. Pondecosystem
- 3..Agricultureland

LITERATURE REVIEW:

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- Nandini and Murali (2012): A preliminary study on abundance and diversity of insect fauna in Gulbarga District, Karnataka, India: A total of 11,318 insects from 6 orders, 26 families and 54 species were recorded.
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METHODOLOGY:

The collection of insects was done once in week between 7am to 11 am during the month of August 2018 to February 2019. Insects collection was done by Handpicking, Pitfall trap and preserved through Liquid preservation and Dry preservation by Direct pinning, Carding, Triangle carding/pointing, setting /spreading insects, Labeling. The data analysis was done by standard softwares ‘Biodiversity Pro’ and ‘PAST’.

Study area: The diversity and abundance of insect fauna was done in three different sites, they are Mango plantation, Pond ecosystem and Agriculture habitat (Maizecrop).



- **Mango plantation area:** This area is undisturbed with thick vegetation includes all sorts of plants, grass, flowers, trees, weeds, shrubs etc (15°44'08.7N°74°98'14.7"E).
- **Pond ecosystem:** One seasonal pond was selected located in Karnatak University Campus (15°43' 48.2N° 74°97'88.4"E).
- **Agriculture habitat:** Maize crop was selected for the survey(15°41'99.7N°74°98'28.4"E).

DISCUSSION AND ANALYSIS:

Insects play important role in ecosystems, which includes soil turning and aeration, dung burial, pest-control, pollination and wild-life nutrition. There are about 1,00,000 insect’s worldwide (Usha and Vimalan,2015). The insect population of particular area is determined by a number of factors like temperature, rainfall and humidity. Study area temperature was ranging between 15.4°C in December, 2018 to 30.6°C February, 2019 with an average rainfall of 16.8mm in November, 2018 to 73.6mm in September, 2018 and humidity of about 17.8mm in February, 2018 to 27.9mm in November,2018. Coleopterans are also known as beetles. Banerjee (2014) have studied the diversity and composition of beetles from Durgapur, West Bengal, India. Sabu *et al.* (2011) have studied the dung beetles of cloud forest from Western Ghats. Venugopal *et al.* (2012) have studied the diversity and community structure of dung beetles associated with semi-urban fragmented agricultural land in the Malabar Coast from Southern India. In our study, we have recorded about 17species belonging to 6 families from all three different sites.

Total number of insect species recorded from order Coleoptera with respect to different family and sites.

FAMILY	SCIENTIFIC NAME	SITES				SL. NO.
		MP	P	D	A	
Scarabaeidae	<i>Heliocoprisbucephalus</i>	*	-	*	-	1
	<i>Anomala cf. dimidiata</i>	-	-	*	-	2
	<i>Phyllophaga sp.</i>	*	-	*	-	3
	<i>Catehorsiusagax</i>	*	-	*	-	4
	<i>Cetoniaaurata</i>	-	-	-	*	5
Carabidae	<i>Calosomainquistor</i>	*	-	*	-	6

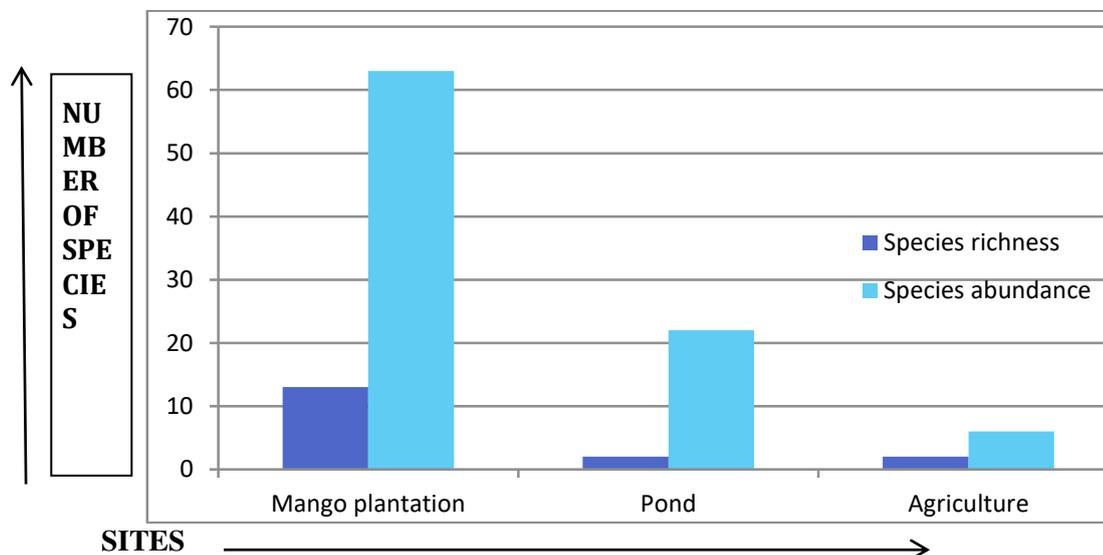


	<i>Brachinus sp.</i>	*	-	*	-	7
	<i>Craspedophorus angulatus</i>	*	-	*	-	8
	<i>Chalaenius sp.</i>	*	-	*	-	9
Elateridae	<i>Lanelater sp.</i>	-	-	*	-	10
	<i>Agrypnusfuscipes</i>	-	-	*	-	11
Cerambycidae	<i>Stenochorusmeridianus</i>	*	-	*	-	12
	<i>Xystroceraglobosa</i>	*	-	*	-	13
	<i>Apriona sp.</i>	*	-	*	-	14
Curculionidae	<i>Cyrtotracheluslongimanus</i>	*	-	*	-	15
Coccinellidae	<i>Coccinellea transversalis</i>	*	*	-	-	16
	<i>Cheilomenessexmaculata</i>	*	*	-	*	17

Statistical analysis of order Coleoptera in three differentsites

Sl. No	Sites	Species Richness	Species Abundance	Shannon Diversity Index	Simpson Dominance Index	Evenness
1	Mango Plantation	13	63	2.409	0.1	0.8554
2	Pond	2	22	2.237	0.5165	0.9835
3	Agriculture	2	6	0.6365	0.5556	0.9449

Graph representing Species Richness and Abundance of order Coleoptera in three different sites.



RESULTS:

The survey of insect was done from three different sites in and around Karnatak University Campus, Dharwad for seven months. A total number of 17species were identified, which belongs to 6families under order Coleoptera. The highest number of insect species was recorded from the Mango Plantation and lowest number of species in Agriculture site. The high dominace value in Agricultural site and evenness with 0.9449

CONCLUSION:

As per the survey and results, the order Coleoptera was found to be diversified in terms of species diversity with of 17species belonging to 6families. Mango plantation site was found to most diversified comprising 13species compared to other two sites. Based on the survey and observation of number of insects, it clearly indicates and suggests that the area is congenial for variety of insect fauna. As per survey species found in order Coleoptera are nocturnal, some beetles preferred to the mild temperature has antipredator adaptations like camouflage, they release



energy stored by click mechanism, stridulation, good pollinators and high tolerance to extreme climate.

The highest number of species was collected from mango plantation as the area is with thick vegetation and use of no insecticides and pesticides is done, which promotes the insect to undergo complete metamorphosis with natural habitat with least anthropogenic involvement. In aquatic habitat, insect species undergo their complete and incomplete metamorphosis (developmental stages) using water medium and are found in or on the surface of water however shown low diverse may be due to the polluted pond water, which was connected with drainage and was unable to support some other insect fauna and the species which were able to survive in that same water grown abundantly. Even low diversity is recorded in agricultural site as because of the use of insecticides, pesticides and weedicides from cultivation to harvest stage which controlled insect diversity in this site.

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HYMENOPTERAN DIVERSITY IN AND AROUND R.T.E.S ARTS, SCIENCE AND COMMERCE DEGREE COLLEGE CAMPUS, RANEBENNUR

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Abstract: Insect, whether measured in terms of their biomass or their numerical or ecological dominance, they are a major constituent of terrestrial ecosystems and should be a critical component of conservation research and management programmes. The collection was done on insect order Hymenoptera in and around R.T.E.S Arts, Science and Commerce Degree College, Ranebennur from December 2021 to March 2022. The total number of 23 species from 4 families of Hymenoptera were identified. The family Formicidae showed highest number of species (1 species) following Apidae, Vespidae and Sphecidae.

Key Words: Insect diversity, Hymenoptera, R.T.E.S Arts, Science and Commerce Degree college, Ranebennur

INTRODUCTION:

Biological diversity means the variability among the living organisms from all sources including terrestrial, marine and other aquatic ecosystem (Harper and Hawksworth, 1994). Hammond (1992) calculated that arthropods constitute 65% of the total known biodiversity. Indian insects belong to 27 orders of which Coleopterans dominated with about 15,500 species. Butterflies and moths of about 15,000 species is another important group these are followed by Hymenoptera (10,000 species), Diptera (6093 species) and Hemiptera (6500 species), (Varshney, 1998). Nandini and Murali (2012) carried out a preliminary study on the abundance and diversity of insect's species in agriculture fields of HadgilHarutti village, Gulbarga district, Karnataka, aimed to determine the species richness, dominance and evenness of insect's fauna from agriculture field. A total of 11,318 insects belonging to 6 orders, 26 families and 54 species were recorded. They reported Hymenoptera (78.86%) was the most dominant order followed by Coleoptera (15.45%), Lepidoptera (3.22%), Hemiptera (1.47%), Orthoptera (0.95%) and Diptera (0.05%).

Study aim: To explore the existing insect diversity of Order Hymenoptera in and around R.T.E.S Arts, Science and Commerce Degree College, Ranebennur.

OBJECTIVES: Insects are not only the most species-rich group on Earth, they also play numerous crucial roles in ecosystem functioning and the global economy. The conservation of insect diversity is therefore a topic of global importance and need of the hour. However, insects are mostly ignored by "biodiversity" research; for example, relationships between insect diversity and vegetation or climate change remain widely unknown. Due to high human interference many insect species became very rare and some are in the verge of extinction therefore a preliminary survey was done on insect diversity under Order Hymenoptera in and around R.T.E.S Arts, Science and Commerce Degree College.

LITERATURE REVIEW:

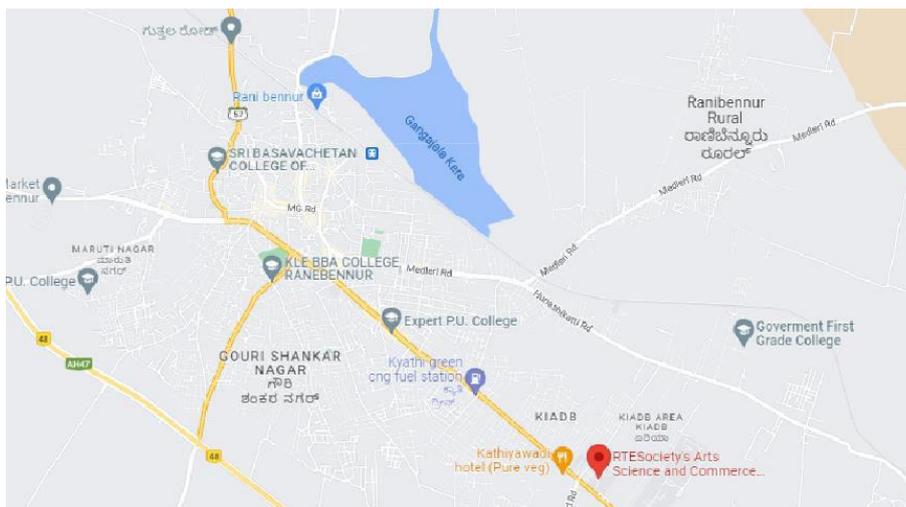
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MATERIALS AND METHODS:

The collection of insects was done once in week between 7am to 11 am during the month of December 2021 to March 2022. Insects collection was done by Handpicking, Aerial/ Butterflynet/Sweepingnet, Beating, Floating, Aspirator, Aquatic net, pitfall trap and preserved through Liquid preservation, Slide Mounting Technique and Dry preservation by Direct pinning, Carding, Triangle carding/pointing, setting /spreading insects, Labelling.

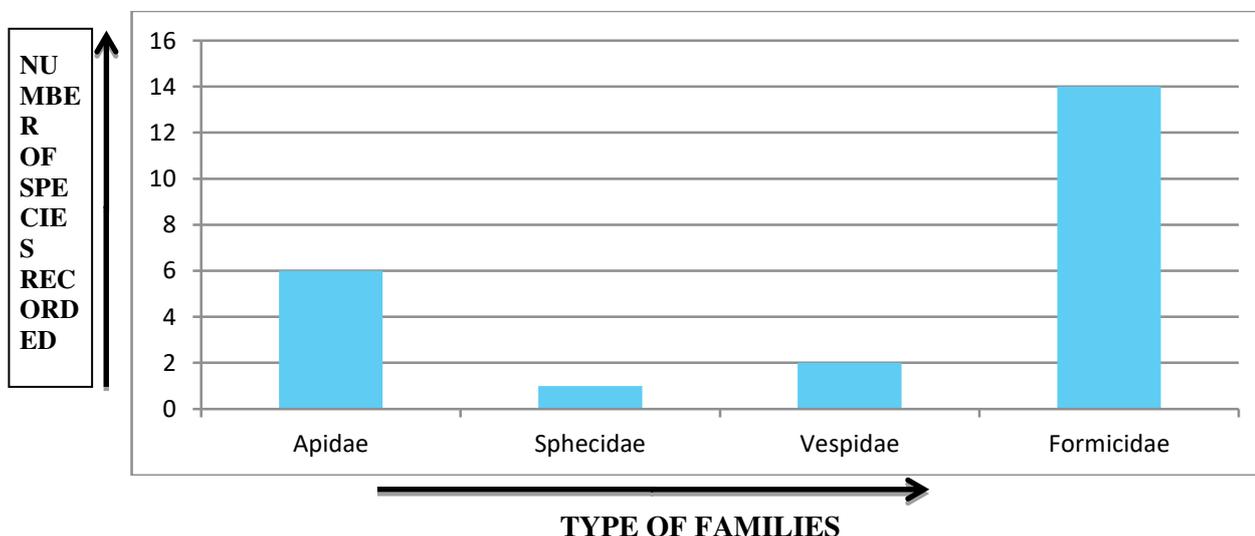
Study area: The insect diversity was studied in the R.T.E.S Arts, Science and Commerce Degree College from December 2021- March 2022. The campus is consisting of College building, a playground, an artificial pond ecosystem, a Botanical garden, Vermibeds and some plantation.



DISCUSSION AND ANALYSIS:

Roonwal (1989) estimated that insects constitutes two third of total fauna in India and comprise nearly one lakh species of which about half remain yet to be identified and studied. Ants, bees, wasps, sawflies, chalcids are collectively called Hymenopterans. They are chiefly small to medium-sized insects, usually with four membranous wings and a narrow waist that sets off the abdomen from the thorax or middle region of the body. The mouth parts may be either of the chewing or lapping type for the purpose of defence they consist stinging apparatus and show development by fertilization as well as parthenogenesis. A total of 4 different species belonging to 2 families under hymenoptera was collected by Priyadarshini.et.al and in our survey 23 species belonging to 4 different families were identified. The maximum species were collected from family Formicidae (14 species) following Apidae (6 species), Vespidae (2 species) and least species collected from Sphecidae (1 species).

RESULTS:



Graphical representation showing Species richness of each family under insect order Hymenoptera



The result revealed that the survey insect diversity under order Hymenoptera in and around R.T.E.S Arts, Science and Commerce Degree College, Ranebennur from December 2021 to March 2022 included a total number of 23 species, which belonged to 4 different families. The highest number of species richness was recorded from the family Formicidae(14species) following Apidae(6species), Vespidae(2species) and least number of species collected from Sphecidae(1species).

Table showing the total number of recorded species in each family under order Hymenoptera

FAMILY	SCIENTIFIC NAME	SL. NO.
Apidae	<i>Xylocopa sp.</i>	1
	<i>Apis dorsata</i>	2
	<i>Anegilla cingulate</i>	3
	<i>Bombus sp.</i>	4
	<i>Apis cerana</i>	5
	<i>Anthophora plumipes</i>	6
Sphecidae	<i>Chalybion spinolae</i>	7
Vespidae	<i>Vespa tropica</i>	8
	<i>Ropalidia marginata</i>	9
Formicidae	<i>Dorylus flabiatius</i>	10
	<i>Oecophylla smaragdina</i>	11
	<i>Harpegnathos saltator</i>	12
	<i>Camponotus vicinus</i>	13
	<i>Camponotus sericeus</i>	14
	<i>Monomorium pharaonis</i>	15
	<i>Pheidole sp.</i>	16
	<i>Brachymyrmex sp.</i>	17
	<i>Camponotus compressus</i>	18
	<i>Meranoplus sp.</i>	19
	<i>Anoplolepis gracilipes</i>	20
	<i>Camponotus radiatus</i>	21
	<i>Pogonomyrmex barbatus</i>	22
	<i>Solenopsis sp.</i>	23

CONCLUSION:

Insects are world’s most diverse faunal group on earth. In terms of both taxonomic diversity and ecological function they have adapted for almost every conceivable environment from equator to arctic and from sea level to the snow-field of the highest mountains, on land, in air & water and almost everywhere. Approximately vast number of insect species including 2,000 praying mantis; 5,000 dragonflies; 20,000 grasshoppers; 82,000 true bugs; 1,20,000 flies; 1,10,000 bees, wasps and ants; 1,70,000 butterflies and moths and 3,60,000 beetles are available all over the World (Gullan, Cranston, 2005). In our survey 23species were identified, which belonged to 4 different families. The highest number of species richness was recorded from the family Formicidae(14species) following Apidae (6species), Vespidae(2species) and least number of species collected from Sphecidae (1species). The family formicidae consist of ant species which has found to be highest insect species in campus under order Hymenoptera due to presence of leaf litter, plants, trees, good amount of soil, dead logs, food crumbs making ant species rich in diversity. The family Apidae include bees is good in species richness with 6different insect species the campus is quite good in gardening consisting of botanical garden with varied herbs, shrubs and trees that supports bees for pollination and nectar collection, the college building and branches of trees supports the bees to build beehive. The survey implied with collection of 2different species of Vespidae which consist of wasps. The nest of wasps includes dead wood, plant stem, and human habitations under roof, attics and sheds etc. However the brood nest of wasps can be



attacked by ants as predators. The least species collection was done from family sphecidae(1species), *Chalybion spinole* (falls mud daubr). From the paper published by Iziko Museums of South Africa, an agency of the Department of Arts and Culture it is depicted that these species lays eggs on Button spiders (*Latrodectus*) and False button spiders (*Steatoda*) to which hatched larvae feed, may be due to least or no presence of these spiders, made this family Sphecidae to be recorded least in number. The conservation of Hymenopteran species should be done as they are good pollinators, venoms from bees, wasps have been used economically to target HIV, cancer, blood clotting, diabetes and and more. Bee products like honey, bee wax is used in market for varities of purposes.

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Diasporic Sensibilities and Multicultural Existence in Amulya Malladi's *The Mango Season*

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Abstract: *A literary work has great and enduring value as an aesthetic achievement, particularly when it is written. Despite the fact that there is much other literature in the world, Indian English writings have a distinct appeal to readers. It incorporates themes from socio-historical, intercultural, multicultural, and multilingual issues. It also contains the writings of the Indian diaspora. The present paper scrutinises the cultural dislocation and multicultural life in Amulya Malladi's the Mango Season. The novel explores Priya's struggles to cope with cultural shocks in her own nation as an effective means of transnational transactions. The novel illustrates all the typical traditional concepts of culture and the challenges of immigrants towards assimilation and multiculturalism in a realistic manner. The protagonist faces cultural encounters and an identity crisis. This paper also looks at how the novel shows cultural displacement, cultural exchange, and living in a multicultural world.*

Key Words: *cultural displacement, cultural exchange, multiculturalism.*

INTRODUCTION:

Indian diasporic literature forms a powerful network that connects the world. It aids in both the dissemination of knowledge and the revolution of several issues. In order to maintain its universal existence and diverse phenomenon, diasporic literature maintains a very cordial relationship with global literature. There are two main kinds of contemporary Indian diasporic writers. The first generation represents the experience of linguistic, social, and cultural displacement, alienation, memory, and nostalgia, whereas the second generation reflects on cultural hybridization, assimilation, and adaptation towards multiculturalism. An impressive corpus of diasporic literature has been produced by both sets of writers. Amulya Malladi was born and brought up in Sagar, Madhya Pradesh, India in the year 1974. She obtained her Engineering Bachelor's Degree from Osmania University in Hyderabad, India and her Masters in Journalism from the University of Memphis, Tennessee, USA. Amulya Malladi moved to Denmark and is now living with her husband and sons after spending several years in the US. Malladi had moved around the country because her father served in the Indian Army. She has written many novels, such as *A Breath of Fresh Air*, *The Mango Season*, *Serving Crazy with Curry*, *The Sound of Language*, and *Song of the Cuckoo Bird*. Collective identity is an integral part of culture. The concept of displacement is applied to all the voluntary and involuntary migrant populations to another place. It includes physical, social, and cultural displacement, but immigrants face many confrontations at the time of assimilation and adaptation to a new culture. When there is a cultural displacement, the immigrants adopt the host culture. The novel explores this kind of cultural displacement, cultural conflict, and assimilation toward multicultural living as a global phenomenon.

MEMORY AND NOSTALGIA:

Priya was born into an orthodox home with strict grandparents, a dominant mother, a kind father, and an adorable sibling. Priya gives more importance to family responsibilities than to her own happiness or professional advancement. She comes from a very orthodox family. They really encouraged her to pursue her further education abroad with some instructions. These instructions were provided to every young Indian man or woman by their parents before they left for another country. The rules apply equally to Priya as they do to everyone else. She is cautioned by them to keep her distance from the foreigners. Her parents, who send her off to study with some instructions on food and behaviours, particularly not to consume beef, not to trust native people of a country, to avoid close relationships with them, and to keep in mind the atrocities committed against Indians by the English, even though it comes last in the list of instructions, "not to marry a foreigner" (Malladi 3). But that was the most crucial



one from her family. However, Priya has her own agenda. She was in a committed relationship with an American named Nick, with whom she shared a home and a mortgage. As for marriage, her opinions on the subject are well-formed before she even sets foot in the United States. Even though she was brought up in a culture in which arranged marriages were commonplace, she was always of the opinion that it was inhumane to expect a young woman of perhaps twenty-one years of age to marry a guy she knew even less than the milkman who, for the previous ten years, had been diluting the milk he sold to the family. As she believed, she was nurtured in a culture in which arranged marriages were the norm. After an absence of seven years, she finally returns to India in order to disclose her true identity. In fact, she didn't want to come to India, but as soon as she landed, her family rushed like vultures on fresh meat, demanding answers, excuses, and pressuring her into matrimonial harmony with some "good Indian boy." She needed to inform her family that she was getting married to a "good American man" (Malladi 5). When Priya arrived in India, she discovered that her family members were in the same state as they had been seven years ago. Her family frequently discusses matrimonial aspects, especially her uncle Anand's marriage with Neelima, which they do not accept. Anand's marriage to a woman from a different caste has caused a continuous struggle in the family. Priya soon discovers that the family's new bride, Neelima, a Maharashtrian Brahmin, is being unfairly treated. The Telugu Brahmin family of Priya thought that Neelima had used love to trick their young son Anand into getting married.

CULTURAL CONFLICTS:

When Priya went to Monda Market, she could not try to eat a mango slice as she felt unhygienic, despite the fact that as a kid she always used to steal mangoes and eat them raw with sea salt and chilli powder. When Priya's mother picks a mango and asks the mango vendor to slice a piece, Priya recoils in horror at the sight of the raw fruit being held so close to her face. She feels and thinks, "Was she out of her mind? Did she expect me to eat that? My Indian friends who visited India after living in the United States said: "Everything will look dirtier than it did before" (Malladi 6). Priya finds it very challenging to reintegrate into Indian culture after returning from the US. She is still unmarried in her parents' eyes, and they want her to be married soon. Despite this, she does not have a problem accepting the fact that she is single. She is twenty-seven years old, and she is terrified that her mother will discover that she is cohabitating with a foreigner with the intention of marrying him at some point in the near future. She often finds herself wishing that she had instead fallen madly in love with a good Indian Brahmin boy, or even better, that she had never had a relationship with Nick at all. She believes that this would have made her life much simpler. She is aware that her mother in particular will never accept her relationship with a foreigner as it's outside Indian culture.

CULTURAL DISPLACEMENT:

Priya looks at her family from an American perspective, the repercussions of cultural displacement may be seen. It seems that, like other immigrants, she has incorporated some of the western culture into her mind, while the Indian culture has become an integrated component of her personality. Priya's love for India is usually accompanied by nostalgia for mangoes and happiness, but it has become nearly impossible for her to stay in India on a constant basis. Priya claims that she has to begin living her life on her own terms, and that she is more likely to attain this in the United States than in India, where she feels stifled by the lack of freedom. She now considers the United States of America as a better option for her future because of the sophistication of its culture and its ideas. If Priya tries to adopt either the Indian or American way of life, she will be disappointed. Her love for Nick has made her embrace the host culture, despite her sadness at being torn away from her family and friends. When Priya considers her romantic history, she remembers falling in love. She did not set out to love Nick. They got together at a friend's home. Sean was a close friend from college, and Nick's ex-girlfriend, and is currently "just a good friend" (Malladi 17). The moment Nick greeted her with "Hello," she was instantly smitten with him. She could not stop thinking about him. Until now, she had never found an American to be very handsome. According to her, the majority of Indian women are conditioned to only find Indian men handsome and attractive. She even says that it is because Indian cultural values have been taught to people for generations. Priya already finds the heat in India to be unbearable. Now, she is sweating even more in her parent's house because she is dreading the possibility of having to inform them about Nick. She had never perspired so heavily when visiting the Monda Market like she was doing now. She had the impression that she had never experienced an Indian summer once before in her life. She gives herself a fast shower to get rid of her sweat stains and the two layers of mud that have accumulated on her skin as a result of her visit to the Monda Market. She then dresses herself in a yellow cotton salwar kameez, to please her mother and glances in the mirror to see how she appears. She felt,



"I winced; I was doing that complaining about India thing that all of us American Indians did. I had lived here for twenty years; the place was a hell hole. Guilt had an ugly taste in my mouth. "This is my country, I told myself firmly, and I love my country" (Malladi 18).

Priya's family holds the opinion that non-Indians have the same level of mistrust for Indians as they do for non-Indians. Any unfavourable characteristic exhibited by an Indian immigrant is presumed to have been shaped by American culture. Malladi depicts the cultural displacement of the Indians by the American influence. Despite the fact that they have been in love with each other for a long time and have married after moving to a new country, immigrants tend to assimilate into the culture of their new home and effectively replace their native culture. She says,

"Manju and Nilesch were classmates from an engineering college in India. They started their romance in the first year of college and survived as a couple through four years of engineering college, two years of graduate school in the United States and a year or so of working in Silicon Valley before getting married. But happily, ever after, evaded them. They had recently divorced, and Priya thinks that she made the big mistake of telling her mother about it. Immediately, her mother says that it is because of "the evil American influence" (Malladi 80).

MULTICULTURAL EXISTENCE:

In the novel, Amulya Malladi represents all of the stereotypes that are associated with cultural clashes. The protagonist in this tale is an Indian woman who is engaged to an American but keeps the secret from her strict Brahmin family. She disobeyed one of the primary commandments that every Indian parent gives to their child: "Do not find yourself some foreign guy or woman to marry." In the present novel, Priya is having a hard time mustering up the guts to confess to her parents that she is in love with a black American man and wants to marry him. So, Malladi looks at how Priya adjusts to living in a different culture when she goes back to her home country. She also looks at the conflicts that arise between Priya and the people she loves most in her home country. After living in the United States for seven years, Priya's way of life and the way she views the world in her day-to-day activities undergo significant shifts when she returns to India. In this regard, we can observe a great number of differences in the manner in which she conducts herself and the manner in which she views the world around her. At the same time, it is clear that she has adopted a new way of thinking as a result of her significant progress toward liberalism, modernism, and multiculturalism. She believes that the 'pelli-chupulu' ceremony, also known as the bride-seeing ceremony, is a complete and utter waste of time. Priya says, "In many arranged marriages, couples don't fall in love with each other; they just tolerate each other" (Malladi 59).

CULTURAL HYBRIDIZATION:

When she made the announcement that she was getting married to Nick, her grandfather told her that he would not allow it. If she tied the knot with him, she would no longer be a member of his family. Priya's possible marriage to a person of a different ethnicity or religion is met with some resistance from him. Now she must decide whether or not to stay with Nick, the love of her life, or her family. Her father, Nana, is also opposed to her choice and tries to convince her by telling her that her marriage to somebody who doesn't comprehend her culture, her heritage, or her traditions will not be successful. Priya feels her anger and irritation rising to a boil as she observes the traditional practises of her parents and siblings. When Neelima explains that because of her dark complexion, Priya's mother also exudes an apprehensive vibe. Nick, however, Priya's boyfriend, was unable to differentiate even the most minute of nuances between the various hues. Priya feels uneasy about herself because of the experiences she has had while living in her own country as a partially alien, as she thinks, "Home was familiar, Hyderabad was stronger, India was as alien, exasperating, and sometimes exotic to me as it would be to a foreigner" (Malladi 134). Since she considers change to be inevitable and unavoidable. Additionally, she is successful in bringing about changes in the lives of the members of her family. At the end of the novel, Priya fights back against the restricted, authoritarian, and chauvinistic culture of the society that is dominated by men. Priya pushes everyone in her extended family to have a powerful voice to resist. Her diasporic identity has a significant and profound effect on the female members of her family. At some point, all of the women learn to advocate for themselves and come to terms with the fact that they deserve a place in society. Sowmya is on her way towards being more modern and self-reliant. As she says, "I am going to change my life, Priya. "I am going to change it. I am not just going to sit down and let them do what they want... I am going to decide what I want to do" (Malladi 182).

Priya's brother Nate is in a relationship with a North Indian woman named Tara, who has no qualms about riding home with him late at night on his Kinetic Honda. Tara represents the "liberated" generation stereotype. At the end, the characters start to come to terms with the fact that they need to cultivate tolerance, liberalism, permissiveness,



and concessions in addition to empowerment in order to maintain and enhance their relationships with the people who are closest to them and have the most significance in their lives. After Priya's announcement that she would be marrying her American fiancé, her grandfather informed Priya's father, "I want you to know that you will be the person with the most blame. You can stop her. Do it now" (Malladi 223). On the other hand, Nana (her father) demonstrates his maturity by loving and accepting his daughter. It was his right to make that decision, just as it was his father's, because she was his daughter. She has his full confidence for accepting, from what he has seen, she was really bright and intelligent lady. He further says, "I think that if she says she is happy with Nicholas, she is telling the truth. Priya is no fool" (Malladi 223).

CONCLUSION:

The writing of Amulya Malladi demonstrates that diaspora is an experience made up of collective and innumerable journeys rather than simply a scattering or dispersion. *The Mango Season* explores the notion of generational and cultural difference. With the displacement of cultures. Malladi demonstrates how India slowly embraces modernity and how generational conflict and cultural displacement result. Priya's social and intellectual changes, on who travels, where they go, how they travel, and under what conditions. Nearly all immigrants from India to America experience cultural confrontations, a sense of alienation, and constant attempts to adapt, adopt, and accept.

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Comparison of in Situ and ex Situ Methods for Preparation and Characterization of $\text{CoCr}_2\text{Fe}_2\text{O}_4/\text{PANI}$ Nanocomposite

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Abstract: The $\text{CoCr}_2\text{Fe}_2\text{O}_4/\text{PANI}$ nanoparticles were synthesized by solution combustion method and synthesized powder were characterized by X-ray diffraction (XRD), and Vibrating sample magnetometer (VSM) technique. The XRD results confirm the cubic spinel structure of the ferrites and crystallite size (D) found in the range of 40-50 nm. Conduction mechanism is in accordance with the electron hopping model. The magnetic properties of the synthesized samples were investigated by using vibrating sample magnetometer at room temperature. According to VSM reports the main magnetic parameters like saturation magnetization (M_s), coercivity (H_c) were found to decrease with the substitution of Co-Cr content.

Key Words: XRD; VSM; Nanocomposites, magnetization (M_s) and coercivity (H_c).

INTRODUCTION:

All the electronic devices emit electromagnetic (EM) fields at various frequencies. Electromagnetic interference (EMI) occurs when electronic devices are subject to EM radiation from external sources at the same frequency ranges at which these devices operates [1]. Electromagnetic interference (EMI) shielding materials are in demand due to their rapid use of radio or microwave frequencies for satellite-telecommunications, military applications etc. [2]. In order to overcome the electromagnetic interference problems, it is essential to develop electromagnetic shielding materials which restrict the admittance of electromagnetic wave by reflection or absorption [3]. Generally, ferrites have been extensively investigated for distinct electrical and magnetic properties for the applications such as microwave devices, gas sensors, humidity sensors, magnetic tapes and electromagnetic interference (EMI) shielding devices [4]. The polyaniline is a promising EMI shielding material due to its attractive properties like conductivity, adjustable permittivity/permeability, easy synthesis, low density, and non-corrosiveness, good thermal and environmental stability [5-6]. Nanocomposite polymeric materials offer several advantages over traditional metals and ceramics used for EMI shielding since they can be easily shaped into a wide variety of morphologies and are substantially lighter [9]. In the present work, Polyaniline/ $\text{Co}_x\text{Cr}_{0.5-x}\text{Fe}_2\text{O}_4$ ($x=0, 0.1, 0.3$) nanocomposites were synthesized by in situ polymerization of Aniline monomer with $\text{Co}_x\text{Cr}_{0.5-x}\text{Fe}_2\text{O}_4$ ($x=0, 0.1, 0.3$) nanoparticles. Structural, magnetic and electromagnetic shielding studies have been undertaken on the synthesized composites.

PANI/ $\text{Co}_x\text{Cr}_{0.5-x}\text{Fe}_2\text{O}_4$ ($x=0, 0.1, 0.3$) nanocomposites were synthesized by in situ polymerization method. (50wt%) $\text{Co}_x\text{Cr}_{0.5-x}\text{Fe}_2\text{O}_4$ ($x=0, 0.1, 0.3$) nanoparticles with respect to aniline monomer was suspended in a 1 M HCl solution and stirred for half an hour to get well dispersed. To the above suspension 2mL aniline monomer is added and stirred for 30 min. 1M HCl solution containing 4.98 g ammonium per sulfate (APS) was then added drop wise to the suspension mixture with a constant stirring. The suspension mixture was stirred for 12 hours at room temperature. PANI/ $\text{Co}_x\text{Cr}_{0.5-x}\text{Fe}_2\text{O}_4$ ($x=0, 0.1, 0.3$) nanocomposites in powder form was then obtained by filtering and washing the suspension with 1 M HCl and distilled water. Filtrate is then dried at 60 °C for 24 hours [7]. The X-ray diffraction patterns of the synthesized samples were recorded using Panalytical X-Pert Pro MPD instrument. The morphological analysis of the synthesized samples were performed using the FESEM CARL ZEISS instrument. Magnetic studies on prepared samples were conducted using Lakeshore vibrating sample magnetometer 7410.

RESULTS AND DISCUSSIONS:

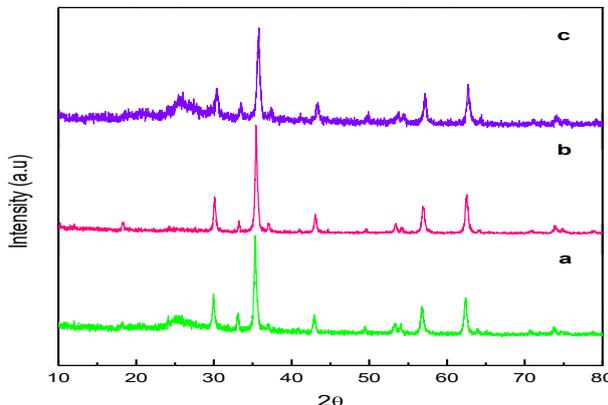
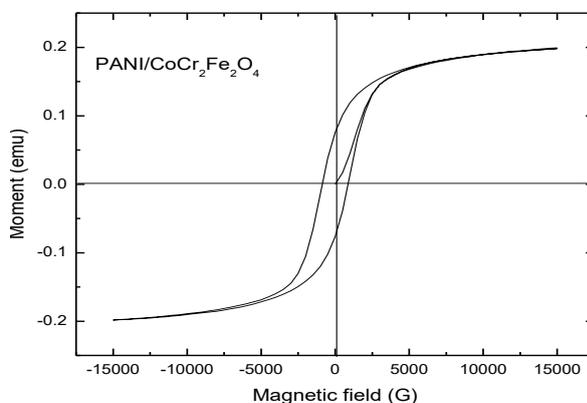


Figure 1. XRD patterns of Polyaniline/ $\text{Co}_x\text{Cr}_{0.5-x}\text{Fe}_2\text{O}_4$ (a: $x = 0$, b: $x = 0.1$, c: $x = 0.3$) nanocomposites.

Structural characterization of all the synthesized composites was performed using XRD analysis. The XRD patterns of PANI/ $\text{Co}_x\text{Cr}_{0.5-x}\text{Fe}_2\text{O}_4$ ($x=0, 0.1, 0.3$) nanocomposites are shown in Fig. 1. XRD pattern of all the samples consist of faint peaks of PANI in 2θ range 22° to 28° with intense peaks of ferrite nanoparticles. The average crystallite size of the samples were estimated by Debye-Scherrer method [6-8].

$$D = \frac{k\lambda}{\beta \cos \theta}$$

Where D is the average crystallite size, λ is the wavelength of the X-ray and β is the full width at half maxima (FWHM) of most intense peak. The average crystallite size of the PANI/ $\text{Co}_x\text{Cr}_{0.5-x}\text{Fe}_2\text{O}_4$ ($x=0, 0.1, 0.3$) nanocomposites are estimated to be around 41.78 nm, 41.80 nm and 41.83 nm respectively.



(a)

Figure 2. Hysteresis loop of Polyaniline/ $\text{Co}_x\text{Cr}_{0.5-x}\text{Fe}_2\text{O}_4$ (a: $x = 0$, b: $x = 0.1$, c: $x = 0.3$) nanocomposites.

Hysteresis loop of Polyaniline/ $\text{Co}_x\text{Cr}_{0.5-x}\text{Fe}_2\text{O}_4$ (a: $x = 0$, b: $x = 0.1$, c: $x = 0.3$) nanocomposites are shown in Fig. 2. The variation of saturation magnetization (M_s) and coercivity (H_c) of PANI/ $\text{Co}_x\text{Cr}_{0.5-x}\text{Fe}_2\text{O}_4$ ($x=0, 0.1, 0.3$) nanocomposites with Copper content is represented in Fig. 2. It is observed that the coercivity (H_c) values found to decrease with increase in Copper content in all the composites. And also it is observed that the saturation magnetization (M_s) decreases from 0.64 emu to 0.28 emu with the addition of Copper content ($x=0.1$) due to increase in magnetic moment on B-sites and it increases the B–B exchange interaction. The increased B–B exchange interaction induces anti-parallel spin coupling, which decreases the magnetization [9]. With further increase in the concentration of Cu^{2+} ions, the saturation magnetization increases slightly from 0.28 emu to 0.37 emu, this may be attributed to parallel spin coupling within the composite. Electromagnetic Interference (EMI) shielding can be achieved by three major mechanisms: reflection of the wave from the material, absorption of the wave by the material and multiple reflections of the waves at various interfaces [10]. Multiple reflections can be ignored when the total SE is greater than 10dB. Thus by neglecting the multiple reflections, total shielding effectiveness (SE_{Total}) of the material is the sum of SE due to reflection and absorption losses i.e. $SE_{\text{Total}} = SE_R + SE_A$ [14].



$$SE_R = 20 \log \left[\frac{\left(\frac{\sigma_{ac}}{\omega_H \epsilon_0 \mu_r} \right)^{\frac{1}{2}}}{4} \right] \text{ (dB)} \quad (1)$$

$$SE_A = 20 \log \left[\exp \left(\frac{t}{\delta} \right) \right] \text{ (dB)} \quad (2)$$

SE_{Total} of the synthesized samples were calculated using equations (1) and (2), variation of SE_{Total} with the applied frequency in PANI/ $Co_xCr_{0.5-x}Fe_2O_4$ ($x=0, 0.1, 0.3$) nanocomposites are shown in Fig. 3. The SE_{Total} values of all the samples are high in lower frequency region and decreases as the applied frequency increases. The Shielding in ferrites is mainly due to domain wall resonance and spin resonance [11]. The absorbing property of PANI-Ferrite composites is due to the dipolar polarization and relaxation effects between PANI and ferrites [12]. The highest level of shielding achieved in this work for PANI/ $Co_xCr_{0.5-x}Fe_2O_4$ ($x=0, 0.1, 0.3$) nanocomposites are 59.11 dB, 56.61 dB and 45.26 dB respectively at 50 Hz. High value of SE_{Total} in all the synthesized samples clearly indicates that these composites are suitable for EMI shielding application.

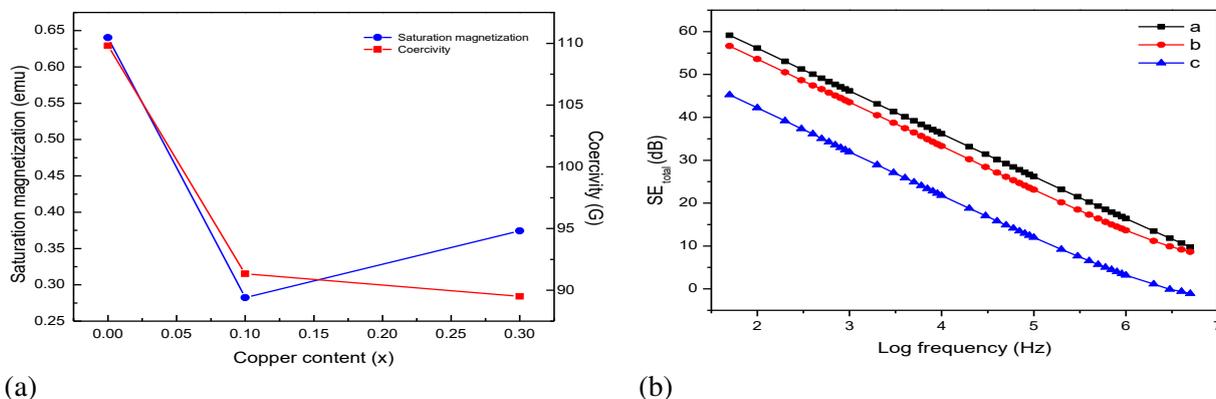


Figure 3: (a) Variation of saturation magnetization (M_s) and coercivity (H_c) of Polyaniline/ $Co_xCr_{0.5-x}Fe_2O_4$ ($x=0, 0.1, 0.3$) nanocomposites with Copper content. and (b) Frequency dependence of shielding effectiveness for Polyaniline/ $Co_xCr_{0.5-x}Fe_2O_4$ (a: $x = 0$, b: $x = 0.1$, c: $x = 0.3$) nanocomposites.

CONCLUSION:

PANI/ $Co_xCr_{0.5-x}Fe_2O_4$ ($x=0, 0.1, 0.3$) nano composites were synthesized by in situ polymerization of Aniline monomer with $Co_xCr_{0.5-x}Fe_2O_4$ ($x=0, 0.1, 0.3$) nanoparticles. Synthesized composites were characterized by XRD, and VSM techniques. Further, SE studies have been undertaken on the prepared composites. Higher values of SE for all the synthesized composites makes them suitable for the application of electromagnetic interference (EMI) shielding.

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Structural and Morphology studies on Polyvinyl Alcohol (PVA) / Zinc Oxide (ZnO) Free Standing Bio-Nanocomposite Polymer Films

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Abstract: Nanocomposites of poly vinyl alcohol (PVA) and zinc oxide (ZnO) have been synthesized using the solution casting technique for different concentrations of nano ZnO powder prepared by low temperature solution combustion method. The formation of polymer nanocomposite and changes in the structural properties of the materials were investigated by X-ray diffraction and the surface morphology of PVA-ZnO nanocomposite films were elucidated using Scanning Electron Microscopy (SEM). The optical absorption spectrum of nano ZnO shows blue shift in the optical band gap energy with respect to characteristic bulk ZnO at room temperature. The optical properties and optical constants of ZnO/ PVA nanocomposite films have been investigated by means of transmittance and reflectance spectra. The optical band gap E_g was determined and the optical absorption spectra showed that the absorption mechanism is a direct transition. The refractive index (n), extinction coefficient (k) and dielectric constant of the films were determined.

Key Words: X-ray diffraction, optical spectroscopy, morphology, polyvinyl alcohol, zinc oxide, scanning electron microscopy

INTRODUCTION:

Nanocomposites are a class of materials having two or more phases, in which one or more dispersed phase of materials with nanoscale dimensions (0-D, 1- D, and 2-D) are embedded in a continuous primary phase, i.e., metal, ceramic, or polymer matrix [1-3]. The creation of synergy between the various constituents of the primary phase with the nano-dimensioned second phase results in enhanced or induced novel properties, which helps materials to meet the required expectations for a given application [1,2,4]. The properties of nanocomposites rely on various conditions and variables, primarily matrix material properties and its nanoscale dimension, which interacts with the nanoscale second phase, and the dimension, size, shape, degree of dispersion and orientation of the second phase nanoscale materials [1,2,4-6]. According to Kanartzidis, "The properties of nanocomposite materials depend not only on the properties of their individual parents, but also on their morphology and interfacial characteristics" [4,6]. If the primary phase matrix material is polymer, then, such composites are called polymer-nanocomposites. The second phase (normally a few percent by weight, wt%), which is dispersed within the polymer matrix and has nanoscale dimension leads to unique properties [1,2,6]. Due to the nanoscale size of the reinforcing phase, the interface -to -volume ratio is significantly higher than in conventional composites. As a result, the volume fraction of the second phase can be reduced, without degradation of the desired properties [1].

PVA/ZnO THIN FILMS PREPARATION:

The Polyvinyl Alcohol /Zinc oxide biopolymer nanocomposites (PVA/ZnO Thin films) were prepared by using the solution casting technique. The commercial grade PVA was obtained from Loba Chemicals, India (E15LV Premium, CAS: 90004-65-3). It is in the form of an odourless white powder. The ZnO powder are used in this work were obtained from Sigma-Aldrich (CAS:1314-13-2).

To prepare the 5 wt% PVA polymer films, 5 g of PVA powder was added to 100 ml of distilled water and stirred for 45 minute at room temperature to obtain a clear viscous solution. Known amounts of ZnO nanopowder (0.01 mg, 0.02 mg, 0.03 mg and 0.04 mg) was added to the 20 ml of viscous PVA solution to prepare different percentages (0.2 wt%, 0.4 wt% and 0.6 wt%) of PVA/ZnO Bio-thin films. The mixture solution was stirred for 15 min for uniform dispersion of ZnO, then caste onto glass petri dishes and dried at room temperature to obtain free standing films. A neat PVA without the addition of ZnO was also casted to obtain a free standing film for comparison. The same procedure was followed to prepare different concentrations of PVA/ZnO biopolymer thin films.

CHARACTERIZATION OF PVA/ZNO THIN FILMS:

X-ray diffractograms for pure and ZnO incorporated PVA films are given in Figure 1. The pure PVA/ZnO shows a single characteristic peak at $2\theta = 20.11^\circ$. When the ZnO were added, a peak corresponding to the PVA shifts towards the higher theta value and the diffraction peak becomes broader. This implies that the dispersed and induces changes in the structural properties of the PVA. Since the concentration of ZnO is very less (0.01-0.04 wt%), peaks corresponding to it are not observed, but for higher ZnO concentrations (0.04 wt%), we can observe all peaks at 31.70° and 37.20° . The changes in the structural properties of the PVA after ZnO incorporation, were quantified in terms of crystallite size (L_{XRD}), lattice strain (ϵ_{av}), and crystallinity (X_c) of the samples.

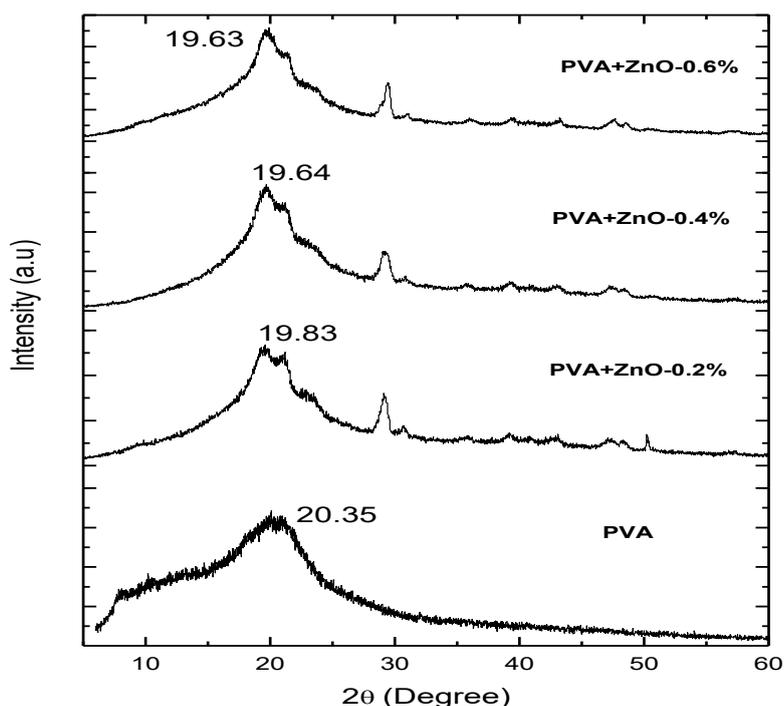


Figure 1: XRD Scans of PVA/ZnO for different concentrations of ZnO.

The XRD patterns of the polyvinyl alcohol and PVA/ZnO composite films at various weight percentages are shown in Fig. 1. It is suggesting that the PVA is amorphous in nature. A peak maximum is observed to be around 20.35° for polyvinyl alcohol, which may be assigned to the scattering between polyvinyl alcohol chains at interplanar spacing. The homogeneously distributed ZnO increases the high surface area of PVA/ZnO composites, leading to increase in the crystallinity of the polymer composites [7]. Therefore, the degree of crystallinity of polyvinyl alcohol increases and the diffraction peaks merged into the zinc oxide peaks, which cannot be distinguished. By comparing the XRD patterns of PVA/ZnO composite with that of ZnO, the observed that the plane oriented to (100), (002), (101), (102), (110), (103), (112) and (201) due to corresponding to $2\theta = 29.25^\circ, 30.63^\circ, 36.04^\circ, 40.35^\circ, 43.02^\circ, 47.20^\circ$ and 50.18° which shows the presence of zinc oxide in polyvinyl alcohol. The XRD patterns of pure polyvinyl alcohol, ZnO and its composite indicates that ZnO has retained its structure even though it is being capped with PVA after formation of composites.

SEM analysis:

The scanning electron micrographs of pure PVA film, ZnO nano powder and ZnO doped PVA films are shown in Fig. 2. SEM of pure PVA at high magnification (Fig. 2a) shows uniformly processed smooth PVA matrix and at low magnification (Fig. 2b) the semi crystalline nature of PVA supporting the observations of XRD analysis. The micrographs of pure ZnO nano powder (Fig. 2c) show that the particles are made up of agglomeration of many primary crystallites with irregular size and shape which is due to the enormous heat generated during the combustion reaction. Further, the images reveal the presence of voids and pores on the surface of ZnO sample [8-9]. These pores are attributed to the inherent nature of combustion derived products due to the large amount of gases liberated during the combustion process. The micrograph at higher magnification (Fig. 2d) shows the hexagonal pyramid form associated with quasi platelet structures and the formation of quasi-spherulitic polycrystalline aggregates are also noticed. SEM image of PVA-ZnO composites (Fig. 2e-h) confirm the changes in the morphology of pure PVA with

dispersion of ZnO into the polymer matrix. SEM shows uniformly dispersed ZnO, where more compactness exists as concentration of dopant increases indicating more crystalline nature of the sample and the surface is rough compared to pure PVA [10].

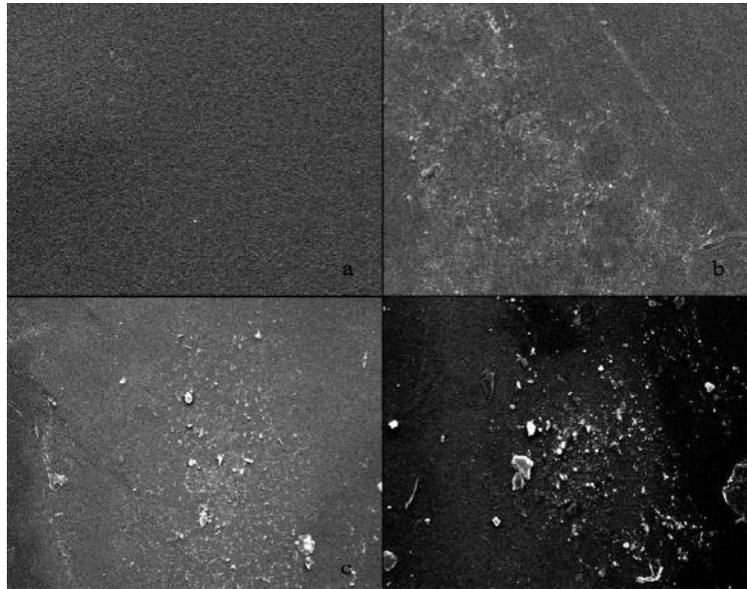


Figure 2: SEM micrographs of (a) pure PVA (b) PVA–ZnO (0.2%) (c) PVA–ZnO (0.4%) (d) PVA–ZnO (0.6%) composite films.

CONCLUSIONS:

The basic optical properties and optical constants of the PVA/ZnO composite films have been investigated by means of absorbance and transmittance spectra. The optical constants such as the optical band gap (E_g), of PVA/ZnO composite films were determined. PVA/ZnO composite films has been investigated as a potential technique of refractive index modulating optical elements. The solution casted PVA/ZnO composites containing various wt% of ZnO were prepared and characterized by XRD techniques. The morphology of the PVA/ZnO composites films elucidated by SEM observed that PVA film surface is smoother than other composite films.

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Green Accounting Importance's & its Applications: An Overview

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Abstract: *The Green Accounting term was first introduced by Economists and Professor Peter Wood in the 1980s. Environment protection is a significant issue all the time. Gross domestic product has become nearly every nation's default measure of development. The present study mainly focuses on the major role of the environment in the progress of the economy of a country and in return the damages to the natural resources; it's an analysis of cost and benefit. The study is based on secondary data available by Indian companies which adopted this system. Green accounting also called various names are Environmental accounting, Resource accounting, or Integrated accounting.*

Key Words: *Green Accounting, Gross Domestic Product, Natural Resources, Cost and Benefit Analysis.*

INTRODUCTION:

Green accounting was first by professor peter Wood in the 1980s into common usage. The purpose behind the Green accounting introduction in the corporate world is to create awareness about the need for the protection of the environment and keeping the environment greenery. The motto behind the introduction of Green accounting is to mitigate the damages from the business activities environment and thereby contribute to the healthy natural environment which is essential to next generation as well as for the economic development of the country. Green accounting is also known as environmental accounting. Green accounting is also known as natural resources accounting. The new system of sustainable accounting; permits the computation of income for a nation by taking into account the economic damage and depletion in the natural resource base of an economy. Green accounting is a new system of accounting that records costs and benefits rendered by the ecosystem business concern. Environmental accounting is an authoritarian tool for the role played by the natural environment in the economy. The green accounting concept existence itself will give a message of warning regarding global warming; because continuous exploitation of the environment, results in environmental degradation which creates global warming and other natural calamities. So for the sake of protection and development of environment would become one of the responsibilities of not only governments but also corporate world. Because the corporate world is the one factor that is responsible for the degradation of the environment. The World is in the era of development. Under the roof of development human being has been getting whatever he wants. But in this development process, the entire natural environment has been damaging. The world is going behind the rapid development in the form of technological advancements, lifestyle advancement meanwhile the standardisation of corporate work style. Just for the sake of profit and to satisfy the customers the corporate world keeps on exploring natural resources. So the current position of the world is all about natural disasters, natural calamities those are just because of exploitation and over usage of the natural environment. The governments of respective countries as well as world organisation have been putting their effort in framing policies regarding environment protection such as the environment protection act 1986, The Forest Conservation act 1980, etc., by the Indian Government. Though there is such a type of effort, there is no effective implementation of policies and acts and protection and progress of the environment. Usually, the companies contribute their valuable services in the name of corporate social responsibility and keeping and financial accounts maintained in the companies, since it is an essential part to companies to take into account the cost and benefits from the natural environment along with their perpetual normal accounting statements at the end of the financial year. So that respective governing bodies in the country or state may get to know each and every company are incurring the environmental cost and getting environmental benefits and their steps towards the environment.

OBJECTIVES OF THE STUDY:

- To know the history and development of Green Accounting.



- To know the importance of a Green Accounting System.
- To study the concept of Green Accounting and various forms of green accounting
- To study the various applications terms and processes of environmental accounting
- To know the legal framework adopted in India for environmental practices.
- To study what are the international initiative in environmental accounting.
- To know the limitations of Green Accounting.

LITERATURE REVIEW:

Alka Solanki (2016), Focused to study and analysis the available literature based on green accounting and understanding how it has been studied and evaluated by different authors who are working on it.¹

Shavita Deshwal (2015), Throws light on opinions for green accounting and reporting practices of selected companies. For an opinion on Green Accounting, they selected 27 manufacturing and 23 non-manufacturing companies and framed a questionnaire on 15 key issues such as environmental policy, health safety, and environment, energy conservation, corporate sustainability, environmental initiative, sustainability reporting, water management, waste management, renewable energy sources, environmental information system, environmental disclosure practices, environmental targets, environmental reporting indicators, environmental costs and benefits environmental liabilities and environmental assets were considered factors for Green accounting with yes or no options. They can't know the difference found between the "F" test that, there is a significant difference between manufacturing and non-manufacturing companies in relation to green practices adopted.²

Dr. Preeti Malik and Dr. Alka Mittal (2015), Concentrated on stages to be followed by the corporate for green accounting in India, such as identification of the environmental reporting parameters, defining the environmental reporting parameters, specifying the environmental reporting targets to be achieved, developing the environmental performance indicators, report the environmental performance results. They also touched on the legal framework for environmental accounting in India. At the end of their study, they found that environmental accounting is in the preliminary stage in India.³

Robert Ombati et.al (2015), They approached the area of environment and its pollution phases. Along with that, they also focused on the issue of the role of environmental accounting in balancing between environment protection and economic development. They also gave a depth theoretical foundations of environmental accounting with distinguishing reference to India.⁴

G. Tarun and Murugan Ramu (2018) in his study on "A study on Green Accounting: A way to Sustainable Development" focused on the Green Accounting is a way of sustainable development.

N Anil Kumar , T Sai Pranitha , N Kiran Kumar in their study on " A study on Green Accounting and Its practices in India" focused on it as a expanding field focus on resource management and environmental impact and also focused on Green Accounting and reporting in India⁵

Vandna (2018), in their study on "A study on Green Accounting" concentrated on environmental expenditure, forms of Green Accounting, legal framework for Environmental Accounting in India and International initiative taken for environmental arena.

Mr.Shashidhara D and Dr.Chandramma M. (2019) in their study on "A study on Green Accounting : Concept and its Importance" focused on the conceptual framework and importance of Green Accounting.⁶

RESEARCH METHODOLOGY:

Research type: Descriptive Research

¹AlkaSolanki, "A Study about Green Accounting: Its importance and concept" Abhinav National Monthly Referred Journal of Research in Commerce and Management, Online ISSN-2272-1166, Vol. 5, Issue 06 (June 2016).

²ShavitaDeshwal, "Green Accounting and Practices", International Journal of Applied Research, ISSN print-2394-7500 and ISSN online: 2394-5869, Impact factor 5.2.

³[https:// archives.palarch.nl](https://archives.palarch.nl)

⁴<https://RobertOmbati.et.al> "Environmental Accounting in India: A Conceptual Framework", MERC Global's International Journal of Social Sciences and Management, ISSN 2348-5620 (Print), Volume 2, Issue 1, pp. 01-11, January2015.

⁵N Anil Kumar et.al, "A Study on Green Accounting and its Practices in India", Journal of Business and Management, e-ISSN:2278-487X, p-ISSN: 2319-7668, pp 30-34.

⁶Mr.Shashidhara D and Dr.Chandramma M. (2019) "A study on Green Accounting: Concept and its Importance" Global Journal for Research Analysis, ISSN No. 2277 - 8160,VOLUME-8, ISSUE-9, (SEPTEMBER-2019).



Data Base: The present study is based on secondary data. Works of literature have been reviewed which were published by the authors who are all working on it. And some information has been collected from various books, journals, articles, and periodicals, etc.

SCOPE OF THE STUDY: The study focuses on the importance and concept and Green accounting. The legal practice and framework for the Green accounting by Indian corporate sector and Green accounting involve estimation of environmental expenditures/cost, capitalization of those environmental expenditures, identification of environmental liabilities, and measurement of environmental liabilities.

LIMITATIONS OF THE STUDY: The present study has not used primary data; the present study has focused only on secondary data on Green Accounting in India.

HISTORY AND DEVELOPMENT OF GREEN ACCOUNTING:

The first environmental accounts were constructed in several European countries working Independently of each other. Norway was one of the first which was adopted Green Accounting. As per the peer members of the country, it was developed to accounts for accounting natural resources. The Netherlands was also a leader in the development, implementation, and adoption of environmental accounting. France was the third early to adopt Green Accounting in the 1980s. Another early accounting project took a very different approach in the late 1980s. US Environmental Protection Agency (EPA) has undertaken the development of a set of pilot accounts for the Chesapeake Bay region of the eastern United States. Philippines, Namibia, Chile, the USA, Japan are other early Green Accounts adopted countries. India's former environment minister Mr. Jairam Ramesh when he was in power stressed the need to the forefront of accounting in India. and the importance to bring Green Accounting Practices Environmental accounting is the identification, measurement, and allocation of environmental costs, the integration of these environmental costs into a business decision, and subsequent communication of the information to a company's stakeholders. As far as they can they measure those impacts (cost and benefits) as precisely as possible in order to permit informed management decision making. Measurement might be quantified in physical units or monetised equivalents. Once the environmental impacts are identified and measured by the companies develop reporting systems to inform the internal and external decision-makers.⁷

IMPORTANCE OF GREEN ACCOUNTING:

- Pollution Control.
- Sustainable Development.
- Assessing, testing, and reporting the performance of environmental activities become easy with the help of Green Accounting.
- It would encourage the government as well as the corporate to invest in cleaner and more efficient technologies.
- Through Green Accounting, nations can observe their economic growth at a sustainable development.
- It would be helpful in developing greener processes and products.
- Businesses as corporate citizens should have a moral duty to play their part in helping to reduce the harm they do regularly to the environment.
- Improving environmental behavior can reduce the cost.
- Environmental-centered management system.

THE NEED FOR ENVIRONMENTAL ACCOUNTING AT THE CORPORATE LEVEL:

It helps to know whether: The corporation has been discharging its responsibilities towards the environment or not. A company has to fulfill the following environmental responsibilities.

- Meeting regulatory requirements or exceeding that expectation.
- Cleaning up pollution that already exists and properly disposing of the hazardous material.
- Disclosing to the investors both potential and current, the amount and nature of the preventative measures taken by the management and organisation (disclosure required if the estimated liability is greater than a certain percent say 10% of the company's net worth).

⁷www.coursehero.com



- Operating in a way that those environmental damages do not occur.
- Promoting a company having wide environmental awareness.
- Control over operational and material efficiency gains driven by the competitive global market.
- Control over increase in the costs for all raw materials, waste management, and potential liability.

Environmental expenditures/costs: These are expenses or costs related to environmental measures including production-related costs and product research and development expenditures which are incurred primarily for ensuring the protection of the environment. Total environmental expenditures can be classified into six categories capital investment, operating costs, research and development cost, environment administration and planning, expenditures for remedial measures, and recovery measures.

Capitalization of Environmental expenditures: Capitalization of environmental expenditure will be justifiable if the cost extends the life, increase the capacity or improve the efficiency or safety of the property owned by the company, the costs mitigate and prevent environmental contamination, the costs improve the property, resource in comparison to its condition at the time of acquisition, the costs which are incurred in connection with preparing the property for sale.

Environmental liabilities: Obligation to pay future expenditure to remedy environmental damage that has occurred due to past events, activities, or transactions or to compensate a third party that has been suffered from damage. It may even include a contingent environmental liability that depends on the occurrence or non-occurrence of one or more future uncertain events or to compensate a third party that has suffered from such damage.

Measurement of Environment liabilities: Environmental liability may be a quantifiable one or a no quantifiable one. If it is a quantifiable one that is if we can measure its value accurately, give it in the balance sheet otherwise give a footnote explaining the nature of such liability. Forms of environmental or green accounting

ENVIRONMENTAL MANAGEMENT ACCOUNTING (EMA):

Management accounting with a particular focus on material, energy flow information, and environmental cost information. This type of accounting can be further classified into the following sub-systems:

Segment Environmental Accounting: This is an internal environmental accounting tool to select any investment activity, project, related to environmental conservation from among all processes of operations, and to evaluate environmental effects for a certain period of time.

Eco Balance Environmental Accounting: This is an internal environmental accounting tool that will support PDCA for sustainable environmental management activities in an organization.

Corporate Environmental Accounting: It is a tool to inform the public of relevant information compiled in accordance with Environmental Accounting. It should be called Corporate Environmental Reporting. For this purpose, the cost and effect (in quantity and monetary value) of its environmental conservation activities are used.

Environmental Financial Accounting (EFA): Financial Accounting with a particular focus on reporting environmental liability costs and other significant environmental costs.

Environmental National Accounting (ENA): National Level Accounting with a particular focus on natural resources stocks and flows, environmental costs and externality costs, etc.⁸

LEGAL FRAMEWORK FOR ENVIRONMENTAL ACCOUNTING IN INDIA:

While industrial licensing has been abolished for all practical purposes, environmental clearance from various government authorities has now taken the center stage. Increasing concern with the protection of the environment and taking anti-pollution measures have become a major concern all over the world in the last two decades. India also set up the Central Ministry of Environment with the object of coordinating among the states and the various ministries, the environmental protection, and anti-pollution measures. Necessary legislation has also been passed.

The various laws relevant to environmental protection are as under:

Directly related to environmental protection:

- Water (Prevention and Control of Pollution) Act, 1974.
- Water (Prevention and Control of Pollution) Cess Act, 1977.
- The Air (Prevention and Control of Pollution) Act, 1981.
- The Forest (Conservation) Act, 1980.
- The Environment (Protection) Act, 1986.

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Indirectly related to the environmental protection:

- Constitutional provision (Article 51A)
- The Factories Act, 1948.
- Hazardous Waste (Management and Handling) Rules, 1989.
- Public Liability Insurance Act, 1991.
- Motor Vehicle Act, 1991.
- Indian Fisheries Act, 1987.
- Merchant of shipping Act, 1958.
- Indian Port Act.
- Indian penal Code.
- The National Environment Tribunal Act, 1995.

It is important to note that all new projects require environment clearance. This clearance concerns both the Central Ministry of Environment and Forests and the corresponding State Governments department of environment. Guidelines have been announced and all such projects are expected to obtain environmental and anti-pollution clearance before they are actually set up. The Central Pollution Control Board (CPCB) has also been set up. Wherever cases of violating standards of water or air pollution have been detected, show cause notices have been issued to industrial units and all such units are being kept under constant surveillance. According to the Annual Report of the Ministry 1997-98, out of 1551 large and 1261 have installed the requisite pollution control facilities and 165 units are in the process of installing such facilities. 125 units have been closed down.

Accounting Requirement:

A Gazette Notification on Environmental Audit issued by the Ministry of Environment and Forests in 1992 (amended vide notification GSR 386 (E), date, 22- 04-1993), under the Environmental (Protection) Act, 1986 has made it mandatory for all the industrial units to submit an environmental statement to the concerned State Pollution Control Boards; while seeking consent to operate under the relevant environmental norms. The Environment Statements enable the units to take a comprehensive look at the industrial operations, facilitate the understanding of material flows and help them to focus on areas where waste reduction and consequently saving in material cost, is possible. Indian Companies Act, 1956 requires to include in Director's report environment-related policies/problems and annexure details of energy consumption energy conservation. Cost Accounting record rules for various industries made by the Central Government also require disclosing monetary and quantitative values in Cost Accounting. The central government and state government have passed various statutes to contain and control the problem of environmental pollution and ecological in balance⁹

International initiative in environmental arena:

In the international arena, work on the design of environmental accounts has been underway since the 1970s. In the 1980s, the United Nations Environmental Program (UNEP), the United Nations Statistical Division (UNSTAT) and the World Bank launched concerned international efforts to build consensus on how the SNA (System of National Accounts) might be modified to include environmental issue. As a result, in 1993, a draft titled Handbook for integrated Economic and Environmental Accounting was published, encompassing the preliminary methodology to be tested and refined. The approach in this document is often referred to as a system of Integrated Economic and Environment Accounting (SEEA). The SEEA tries to integrate the various methods available for environmental accounting into a single framework. This document offers a series of versions or „building blocks“ for the construction of accounts beginning with physical accounts and disaggregation of data already included in SNA. It also works towards more complex information such as calculation of depletion and estimation of maintenance costs required for sustainable use of resources. None of the versions of SEEA encompasses the valuation of non-marketed environmental services. UNSTAT, with UNEP and other experts, is preparing a practical manual or Work Book for implementing SEEA. The SEEA is a proposed methodology and does not have official approval of the United Nations. This is to be tested over the years for bringing refinement in the methodology.

CONCLUSION:

Green accounting is a popular term for environmental and natural resource accounting, which incorporates the environmental assets and their source and sink functions into national and corporate accounts. India still is not in the

⁹<http://joics.org/gallery/4105.pdf>



Promising stages of development when it comes to Green accounting. So as the government of India has to make mandatory of execution of corporate social responsibility under the companies act 2013, the same kind of strict legal framework should be done in compulsory adoption of Green accounting with certain conditions. This may spread a wide range of seriousness to the corporate sector towards environment conservation and protection. They should also conduct some programs to educate the corporate sector about Green accounting and its execution in the companies. A separate audit committee should be formed in order to check and examine at a regular interval about green accounting and its implementation in business organisations.

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The Concept of Region and Regional Development

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Abstract: *Economic regionalisation of the developing countries is one of the important problems that now commands the attention of scientists. The words region and regionalism have no precise meaning and they convey different meaning with different contexts.*

Key Words: Regional Development.

INTRODUCTION:

Concept of regional development is used to express the way in which, centralised state decentralises its administration whereas according to a separatist movement, it calls for the complete severance of the region from the existing state. To be brief, the mode of regionalism lies between the extreme that implies the grant of considerable powers to a region, nevertheless, remaining a part of the larger unit-the State¹. The regional development approach enables the planners to cope with numerous difficulties since both economic growth and balanced regional growth are inter-linked since both call for optimum utilisation of resources of an economy.

OBJECTIVES:

- To understand the concept of regional development
- To know the areas of regional development

Scope: Paper covers idea of regional development in the context of India with comparison to other countries as well.

METHOD: Analytical describe two method has been used in the development of this paper.Region in real term refers to a genuine entity which expre sses both natural and cultural differentiation from its neighbour. Every region possesses its individual and unique characteristics to which contribute the features of soil, atmosphere, plants and man.

VISTAS OF REGIONAL DEVELOPMENT:

The region is found from a small village as a nodal point of growth to a cluster of independent countries. The Nagoya Seminar regarded problems in ECAFE region different from that of advanced countries. Thus region refers to (a) space or area (b) contiguity (c) common development problems. In this sense, the region may be a nation, a continent, a state, a part of it or even a small area. One U. N. Seminars considered three types of regions having their particular problems:

1. Metropolitan-having probems of urbanisation. industrialisation ard
2. Resource development region having problems such as hydro electric watersheds.
3. Rural region - having problems of rural development and improvement.

McCrone has used three criteria in evolving a regional scheme (a) the homogeneity, (b) city region and (c) historical cum political or cultural awareness. Thorner adopted following criteria

- a. Socio-economic systems.
- b. Types of land holding and concentration of control.
- C. Labour supply.
- d. Control of credit, marketing, processing, shop-keeping.
- e. Cropping pattern and cultivation units.
- f. Overall degree of modernisation, industrialisation, urbani sation, population growth.



REGIONAL DEVELOPMENT DEFINED AND DESCRIBED:

However, the whole analysis is inconclusive. Moreover, several criteria are overlapping and certain aspects like occupational pattern of the population, the participation rate, etc. have been omitted. Christaller has given the concept of city region which has been further developed by Dickenson based on homo geneity criterion. The post War development in the thinking of economic growth relating to regional planning, applying urban rural distinction for explaining region is of much significance. This regional approach is intended to check the current power ful trend towards overgrowth and over-crowded urban centres and to achieve a more balanced economic and social life within the region as a whole. Considering the various aspects of region, it can be defined operationally the most convenient and economically the as most gainful spatial, sectoral and/or temporal unit for resource allocation, taking planning as merely a process, growth as the economic result and welfare as the ultimate goal."8 Obviously the definition of economic region is no easy task. Since every economic activity needs some geographic space the spatial aspect cannot be neglected but the human settlements failed to occupy the entire space uniformly and economic activities did not spread evenly. This necessitated the analysis and problem of economic regions which delineate zones of influence of clusters of economic activities. The heirarchical structure of cities reveals the inter-linkage of various economic activities into a spatial organization. Christaller, Losch, Myrdal, Isard, Perroux and several others have emphasised towards concen tration and unbalanced growth of economic activities. Owing to 'vicious circle of backwardness' which implies a circular relationship of forces which keep a poor and backward economy in a state of poverty and backwardness, the backward region remains backward. Induced investment is considered as one of the effective tools to break this circle. The developing countries facing the problem of imbalances which acts as cons traint on economic development, have to adopt an integrated approach for planned regional developmnet. It is the pattern of investment which holds the pivotal position. The Hirschman approach of unbalanced growth is not appropriate for such economies and sectoral as well as spatial balanced growth can only foster the pace of development. However, the problem is not so simple as it may appear.

From development point of view, the problem of economic regionalisation can be solved through phasing out the prog ramme. First, by plotting out the economically important natural resources including forecasting the most effective direc tion of further exploration for and multiplication of a country's natural resources. Secondly, technological regionalisation i. e. the technologically rational use of various natural resources to establish the initial contours of the production profile of the individual regions. Thirdly, unification of available potential production centres so as to ensure optimal utilisation of the resources-the most crucial one. Von Thunen was the first to contribute towards location theory and spatial specialisation in agricultural production around an urban area. The transport costs vary according to the distance and thereby determine the extent of specialisation. Weber developed a regional theory which is cost oriented conducive to finding out optimum locations from the point of view of least cost combinations. He explained systematically how industry, urbanisation and social structure are built up on the top of agricultural stratum. Christaller developed a model leading to a hexagonal pattern of cities and villages which offer higher and higher ranges of services. These central places form a hierarchy in the ranges of services they offer. Each central place that offers the same range of services is situated at an equal distance from one another. Each central place will thus have a distinct service of its own. These centres by making exchange of goods and services, not only permit specialisation of tasks and division of labour but creates beneficial inter-connections between regions and persons that hold society together. It provides incentives for producers and at the same time facilitates the distribution of goods in accordance with consumer preferences. The succe ssive higher service centres offer a higher range of services than lower ranks and thus they do not compete with each other. Although, such mechanism is a product of histori cal forces yet can be devised at will through proper planning. Christaller's model has been considered suitable for deve loping economies, however it has several limitations. McCrone considers that "in a region which is primarily made up of towns which are market centres and provide services for the surroun ding areas", the theory is valid but "it is much less likely to be satisfactory where there are heavy concentration of manufac turing or extractive industries whose products are sold all over country and exported."11Developing Christaller's theory, Losch finds two oppo site pulls that determine the location of industries. First is the economies of scale-internal and external and second is trans port cost. The average cost for a product at a certain distance from the centre of production may rise even when the eco nomies of scale operate because of transportation costs rising with increasing distance. At a point, the rising costs of trans port negate the advantages of the economies of scale. There fore it will be more economic to manufacture the product at another centre than to pay for increased transportation costs. Losch model also gives a hexagonal market pattern, but it will be different to that of Christaller's. Losch model is not strictly hierarchical. The higher centres do not perform the entire range of services offered by the lower centres. Similarly, different kind of services may be offered by the centres irrespective of the size. However, in developing economies, location of such centres is obstructed by number of factors. Myrdal observes that "Within broad limits the power of attraction today of a centre



has its origin mainly in the historical accident and some thing was once started there". Clark thinks that location decisions once taken may continue to have important effects on the economy for centuries to come.

Perroux put forth a new approach of regional analysis where the region is seen in a dynamic context of economic development. The delineation of regions is based upon the growth possibilities. Perroux observed that "development does not appear all over the territory at a time, it manifests itself at a number of points or poles of growth with varying intensity, it spreads itself through diverse channels and with varied end-effects for the totality of the economy." This growth pole theory has been further developed by Davin. Schultz¹⁶ maintained that economic development occurs in a specific locational matrix which is primarily urban in composition. The peripheral area remains backward since commodity and factor markets work most efficiently at or near this matrix. Thus the growth takes place in accordance with the doctrine of comparative advantage. It has got "spread effects" and in case, growth does not take place (owing to lack of growth points) the state, through deliberate policy should develop such centres at several places, to bridge the expanding gap between the leading and the lagging region. Boudeville described pole of growth as a zone of development. The theory suggests that massive investment should be concentrated at favourable areas to make it more effective and maintain continuity. This approach substitutes the theory of economic space for the concept of geographic space. Although the theory neglects the problem of social costs yet sees the regional problem entirely rely in the context of an overall growth. Thus the regional development forms an integral part of the general theory of growth.

REGIONAL DEVELOPMENT IN INDIAN CONTEXT:

However, it rules out the risks involved in selecting few favourable areas where the investment has to be concentrated. In underdeveloped countries like India, this is one of the greatest obstacle in adopting this approach. Another difficulty is of finding such enormous resources for investment, particular & whole economy is poor and backward. The huge investment in certain big projects do not yield the desired results and leads to sub-optimal use of resources due to number of factors such as, existence of non-monetized sector: unutilised irrigation capacity, non utilisation of power by agriculturists, selling of agricultural produces at a lower prices in village itself etc. The impact of the big projects erected in India during last 20 years could not serve the purpose of growth poles and could not generate growth in hinterland. The spread effects could not be realised but on the other side, backwash effects became vigorous creating several problems of urban unplanned growth and other hazards. The dualism has been developed in economy. In the Indian context the Integrated Area Development approach has been considered useful which aims at spatial and functional integration. It aims at micro level planning with a view to balanced growth with appropriate technology and methodology. However, there is no hitch in accepting that such approach did not materialise in yielding fruitful results in country and the regional balanced development is still a cherished goal.

CONCLUSION:

The growth centre is an effective device of regional planning and is being adopted in several countries as a strategy of economic development. In India 20 such growth centres have been marked out. However, the existing socio-economic set up, level of existing technology and skill and absence of adequate infrastructure could not introduce dynamism in the backward regions.

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A brief study on an Emerging Trends in E-commerce at present Scenario

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Abstract: In day to day life, buying and selling activities of the goods and services through online is general platform of business in present era which includes the commercial transactions through an electronic data using the technology. In recent days, the idea of “E-commerce” is in emerging trend in an India as well as across the globe. The understanding and simplification of e-commerce is most needed for present scenario to make free from the challenges faced by e-business players in India. To check the prospects of E-commerce in India, it is an attempt of about how to overcome it in trending commercial fields and some suitable suggestions based on the findings in the literature.

Key Words: E-Commerce, Online Business, Electronic Transactions.

INTRODUCTION:

E-Commerce is nothing but the buying and selling activities of the goods and services through online, including the transactions of business to business (B2B) and Business to customers (B2C) as well as paperless exchange plus extensive cost savings etc. Original means, the facilitation of commercial transactions through electronic, using technology such as electronic data interchange (EDI) and electronic fund transfer (EFT). Further the new technology changes brought out automated teller machine (ATM) credit card and applied timing in various commercial and banking activities. After LPG it came to implement extremely in various countries for the growth and development. Today each and every business require to have an own E-Identity to spread their company e-address, e-communication product and service details between firms and users.

REVIEW OF LITERATURE: Keeping in the mind of the study needs the researcher is going to collect the required information from the different sources which are available in the domain area of the study. The whole review of literature is available in four main categories such as Review of thesis, Review of Books, Review of articles and Review of committee reports.

METHODOLOGY:

Source of Data collection:

- Primary data which is going to be collected through online interviews, questionnaire structured and is obtained by conducting survey among the users of e-commerce.
- The present study is conceptual purely based on secondary data which is going to be collected from books, national journals, international journals, published reports of government and other websites.

Tools and Techniques:

Suitable tools which are going to be appropriate for the study based on that the tools like percentile, Chi-Square, F-Test, T-Test etc. will be applied.

BRIEF CONCEPTUAL FRAMEWORK OF E-COMMERCE MODELS: Business to Consumer (B2C):

In a B2C model a business sells a goods or services to an individual consumer (eg. purchasing of books from an online retailer)

Business to Business (B2B): B2B business model is a model where a business sells a good or service to another business (e.g. A business firm selling products or services to other business firms)



Figure 1: Structure of E-Commerce.

Consumer to Consumer (C2C): When a consumer sells a good or service to another consumer (e.g. you sell your old furniture on eBay to another consumer).

Consumer to Business (C2B): When a consumer sells their own products or services to a business or organization (e.g. An influencer offers exposure to their online audience in exchange for a fee, or a photographer licenses their photo for a business to use)

SCOPE OF E-COMMERCE:

E-Commerce fundamentally started by Amazon.com from the debate of garage with Jeff Bezos in 1994 and it's populated from site of eBay, Dell, Walmart and others. Today e-commerce is going to expanding on the basis of their internet attendance. Everyone expectation innovation from this online commerce for that reason, it may reach all over world through the large number of transaction.

BENEFITS OF E-COMMERCE:

Distance: not require to visit many places for different products and all the products available in one place. i.e. E Commerce.

Time: at any time to buy and sell product facilities (24/7).

Low Cost: low operational costs with best quality and services.

Flexibility: easy to reach customer provided address and it's not limited area distribution.

Disintermediation: between the consumer and producer intermediates (have a chance to earn more profit) are eliminated here, at the moment new e-intermediary avoiding those high cost payments from buyer.

Greater access to market: Technology is a critical foundation of any e-commerce operation. Buyer can access from one place to another place product and services at anywhere in the world.

Error choice: online retailers are concentrating more to minimize charge backs and payment fraud.

No wastage of time: selecting/ordering the products are very easy without moving about physically

LIMITATIONS OF E-COMMERCE:

Inability to touch the products: It is not easy to get the product with touch and there is no guarantee for quality, no interaction between customer and Product Company.

Business dissatisfaction: as most businessmen do not know how to run e-business.

Hackers: E-commerce will bring with it unfair, illegal and fraudulent activities, international cybercrimes, legal laws and develop web-based systems to check illegal practices, etc.

Bargaining: no chance to bargain from the fixed price as well as Inability to reach out to women and elderly persons.



Internet access limited.

Limited use of credit cards: Most of the credit cards allow only little transaction per day to avoid certain miss-use practices. PC Malware can harvest credit card numbers when entered during e-commerce payments. Few harvested numbers may be used by fraudsters to purchase goods with purchase products showing up on the user's credit card bill.

Information Loss: there is no chance to get intermediaries value-added activities and services such as; cost details, lack of privacy, product information, payment protection and pricing inefficiencies, etc.

Loss of ability to scrutinize products from remote locations.

Difficulty in conforming to EDI standards.

Virus attacks: mechanical failures can cause in the process of random effects.

CONCLUSIONS:

E-commerce is the production, distribution, marketing, sales/delivery of goods and services by electronic transactions using advanced technology. The commercial transactions involving both organizations and individuals, that are based upon the processing and transmission of digitized data including text, sound and visual images and that are carried out over open networks like the internet or closed networks like, AOL or Mintel that have gateway onto an open network. Main aim of this e-commerce is provide the low price product, faster response with better service quality by using the technical components such as client/personal computer, transaction server, database server.

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SIDEPRENEURSHIP IS A BOOMING TREND FOR WOMEN TO REDUCE STRESS

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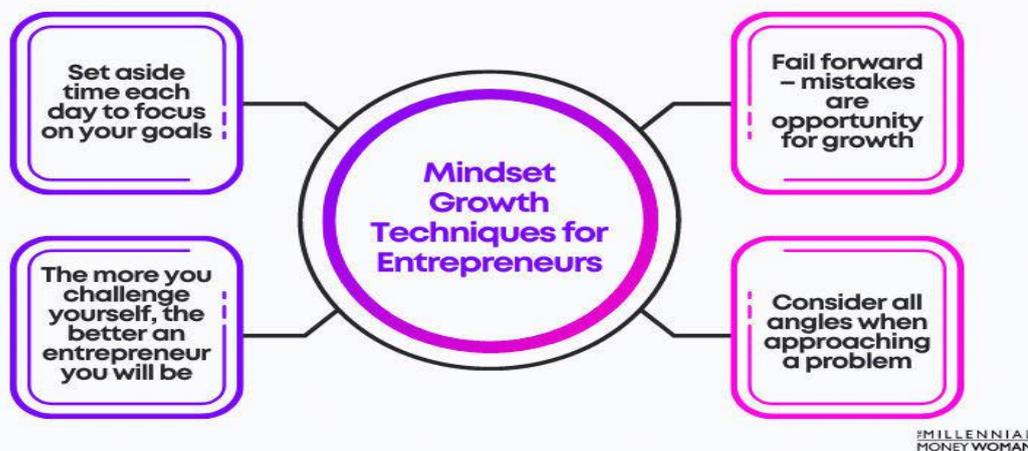
Abstract: *The art of living is not that easy for women in the present competitive world, as we all know that financial aspects burdens and disturbs the family and it leads to stress. The women is working equally and giving competition for men but even though in a certain period the women takes a break and it may discontinues in her career and leads to stress. The stress is not good for the daily life but sometime it motivates us to make some strong zeal in the mind. To improve our standard of living we need to earn more apart from the main income, the sidepreneurship is the best low-risk strategy for women that she can pursue at her own pace according to her own schedule by investing less capital and satisfy their need and reduces mental and physical stress towards the financial aspects. This paper is to analyze the stress level of women and creating awareness and measures towards sidepreneurship the small scale business concept for women at large.*

Key Words: *Women, Stress, sidepreneurship, Finance and Small scale.*

INTRODUCTION:

Sidepreneurship is a new term to everyone but it is having a realm for female entrepreneurs. It is very stunning to work without disturbing the primary work life because we can work 20 hours per week as a part time job. It is a very curious to earn money and to lead a happy life. The stress is inevitable to all the human being especially for women it will be more as compared to men. In today's present life working is mandatory for women too. So due to many inconveniences like taking care of children's, family and playing multi role is also mandatory so this is the concept sidepreneurship which helps us to do business which is small or big investment to reduce stress towards financial burden in the family. A sidepreneur is working a regular job as an employee but also hustling night-shifts or at the weekends to realize his/ her dream of building their own start-up. This reduces the financial risk. However, you are not fully focused and might struggle to balance your corporate job and your start-up. You can also reduce your main job to eg.4 days a week and thus unlock a full workday for your side hustle.

Mindset to become an Entrepreneurs:



The 2019 State of Women-Owned Business Report said the growth rate of sidepreneurship for women between 2014 and 2019 have been far greater than for all women-owned businesses: 39% vs. 21%.



The Growth of Sidepreneurship for Women:

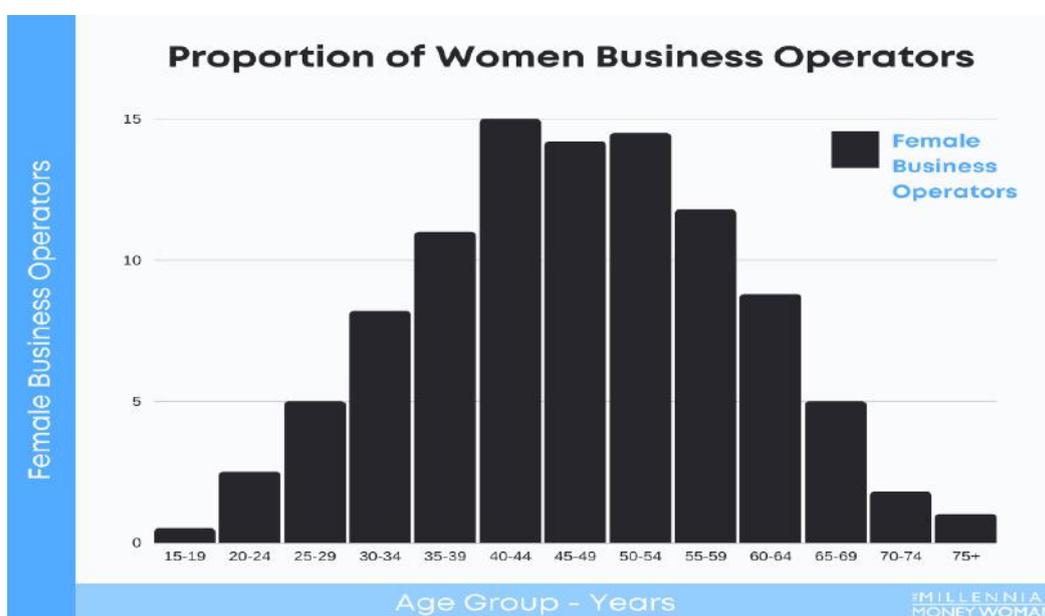
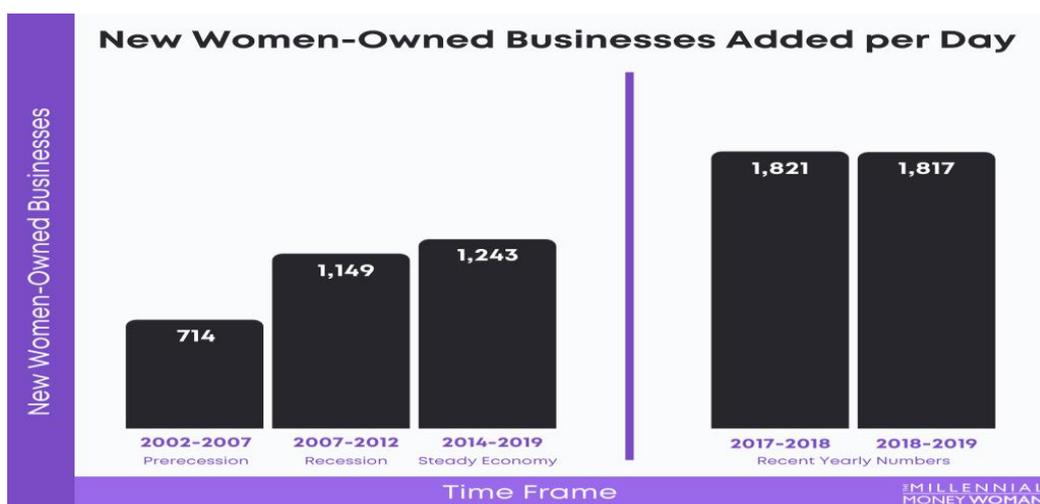
It’s also been stronger than for all adult sidepreneurs (32%). And it was twice as high for minority women-owned businesses as all sidepreneur businesses (65%). By far, the highest growth rate in the number of sidepreneur ventures has been among African-American women — triples that for all businesses.

SCOPE OF THE STUDY:

The purpose of this study is to understand the concept of sidepreneurship and how it reduces stress towards women life by choosing the new low risk strategy.

Why more Women are turning to be an entrepreneur?

Being in a 21st century the women need to be update themselves to be a successful sidepreneur by choosing right business at the right time in order to get great success in life and should helpful to the society too. The women are more struggling to meet their demands and low investment can be invested easily by taking help from the several financial institutions under various schemes to start up a small scale business. So to meet the challenges in this area the women are choosing this field to be fit in this. According to the survey we can see that there is a tremendous changes day to day and increasing in numbers by the women entrepreneur as per the 2019 data, mostly the women who is having age group of 35-55 are more in this business operator and now a day’s young professionals are coming towards this segment and taking knowledge about the industry and changing perception of female towards the society to involve more and more number of women in this transitioning to running a start-ups. The following chart shows the clear picture of the growing women in sidepreneurship:





REVIEW OF LITERATURE:

Janis Elaine Jones (2021) the study has opined about the women small business proprietor has overcome with certain barriers to become an entrepreneurship to be a business owner, the main need is to be concentrated on education to support and change the positive result in society, than they should get financial assistance to start-ups and providing all the required information for the aspiring women to reduce the failures from business certain strategy to be accessed to be successful entrepreneur by choosing sidepreneurship and providing employment growth rate, standard of living and gender equality in the society.

OBJECTIVES OF THE STUDY:

- To measure the sidepreneurship for women in small scale business.
- To identify the stress level of women in search of new business.
- To identify the reducing stress level for women in sidepreneurship.

RESEARCH METHODOLOGY:

DATA COLLECTION AND SAMPLING DESIGN:

Here the both primary and secondary method of data is used.

- The primary method of data is collected randomly from the women in Davangere who are doing the sidepreneurship business in a small wise.
- Sample size is taken from the 40 respondents and it is considered for this paper.
- The stratified random data is used among the women.
- Secondary data is collected from the various articles, websites and concerned books.

INTERPRETATION OF DATA:

The data is analysed through percentage method for the information I have circulated questionnaires to 50 respondents among 40 respondents have gave the information and it is mentioned below for analysis:

Table 1: Age Group of Women respondents:

Age Group	Number of Respondents	Percentage
20-30	7	17.5 %
30-40	16	40 %
40-50	8	20
Above 50	9	22.5
Total	40	100%

Source: Primary data

- Here out of 40 respondents the age is segregated on 4 groups and they lies on the following: 17.5% women lies under the group of 20-30, 40% comes under the age of 30-40, 20% lies on 40-50 age and last 22.5 % lies on the age group of above 50%.
- The above data indicates that 40% of the women lie under the age group of 30-40 and we can see that the women who have chosen sidepreneurship business along with their main business are more.

Table 2: Qualification of Women:

Qualification	Number of Respondents	Percentage
SSLC /PUC	15	37.5 %
Degree	18	45 %
Post Graduate	5	12.5 %
Other Professional Degree	02	05 %
Total	40	100%

Source: Primary data



- The Qualification of women is as follows and 37.5% of women have completed their SSLC/PUC, 45% of women have completed their graduation, 12.5% of women have pursued their post graduation and 5% of women having other professional degree.
- Here 45 % of women have completed their degree and doing the other job and as well as doing other sidepreneurship too.

Table 3: Experience of Working Women in sidepreneurship:

Experience	Number of Respondents	Percentage
1-5 Years	14	35%
5-10 Years	9	22.5%
More than 10 Years	17	42.5%
Total	40	100%

Source: Primary data

- The experience of the women in the business is as follows 35% of the women are having 1-5 years of experience, 22.5 % of women having 5-10 years of experience and 42.5 % of women having more than 10 years experience in the field of business.
- Here we can see the business women of 42.5 % who is having more than 10 years and also getting settled in the long run business of sidepreneurship.

Table 4: Income level of Working Women:

Income Level	Number of Respondents	Percentage
5000	2	5%
5000-20,000	15	37.5%
20,000 – 40,000	18	45%
Above 50,000	05	12.5%
Total	40	100%

- The income of the women employee in Sidepreneurship is 5% who is having only 5000 income, 37.5% of women is earning in the range of 5K to 20 k, 45% of women is having income level of above 20 k to 40 k , 12.5 % of women’s earning is in the range of above 50,000.
- Here almost we can see that majority of women’s earning is lies between the range of 20000-40000 and which is more and 45 % too.

Table 5: The Stress level of working women in business:

Stress Level	Number of Respondents	Percentage
Regularly	18	45%
Never	06	15%
Sometimes	16	40%
	40	100%

Source: Primary data

- Here the stress level of women employee is facing regularly due to the different types of pressure faced in the sidepreneurship and we can see 45% of women are facing stress regularly, 40% of women are facing stress sometimes and 15% of women are never feeling any stress.



- So we can analyse that this type of business is also having more stress and facing a huge burden on financial aspect after covid-19 pandemic especially.

Table 6: Measure of sidepreneurship among working women:

Variables/ Causes	Number of Respondents	Percentage
Start-ups	15	37.5%
Capital Formation	16	40%
Growth	9	22.5%
	40	100%

Source: Primary data

- The various measures have been included in the sidepreneurship 37.5% of women have done with the start-ups, 40% of women have formed with the stable capital formation and 22.5 % of women found growth in their business.
- Here we can see that and measure the different aspects of women in sidepreneurship and majority of the women are making capital formation so that we can analyse business is giving good profit.

Table 7: Financial stability of women by implementing sidepreneurship:

Particular	Number of Respondents	Percentage
Increased	12	30%
Decreased	09	22.5%
Stable	19	47.5%
	40	100%

Source: Primary data

- Here the financial matter held stable in sidepreneurship as we can see the percentage that 47.5% are stable, 30% of women running their business has developing rapidly and only 22.5% of women are facing decrease in the income level and loss in the business .

Table 8: Stress level has reduced by choosing sidepreneurship by women employees:

Option	Number of Respondents	Percentage
Yes	31	77.5%
No	09	22.5%
	40	100%

Source: Primary data

- The women entrepreneur stress has reduced by opting sidepreneurship business along with their normal job and number of respondents has agreed and almost 77.5% of the respondents are positively accepted and their financial stability has improved and stress level got decreased.

FINDINGS:

- The women are facing with financial burden.
- The stress is causing due to the frequent changes from the customer.
- The women having lack of support from the government and family too.



SUGGESTIONS:

- The proper training must be given to the working women in small scale business.
- The awareness and new ideas to be given for women to carry down a business.
- The stress reduction free programmes to provide for the stressed women employees.

LIMITATIONS:

- It is conducted only for the women employee.
- The data is collected from the limited extent.

CONCLUSION:

Sidepreneurship is a new concept in India but even though we can observe that many of the people are implementing and developing huge growth by adopting it. Sidepreneurship is an opportunity to earn better and it gives rise to the standard of living among women employee to be an independent entrepreneur. As growth in the standard of living definitely women can come out from the stress symptoms and gradually it will help for the women by getting proper training and implement it in a systematic way.

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Scheduled Tribes in Indian Forest

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Abstract: Indian Forests are home for the several people including Scheduled Tribes who lived in near Forest areas of the country, in 2006 Forest Right Act was passed to give legal rights for these forest Dwellers that home, land and lively hood.

Key Words: Forest Dwellers, Scheduled Tribes,

Introduction:

The forest Dwellers spread across the country under the restriction of the Forest Right Act meanwhile few Non Government organizations and several wild life groups raising objection against it and raised their voice in Supreme Court of India. On 13th Feb 2019 Supreme Court of India directed 21 states that illegal Forest Dwellers who claims over the land should be rejected by Government Authorities the addition of this order could have affected 11.8 lakhs forest Dwellers who are living in the different part of the country.

Research Methodology:

This Research paper prepared with help of secondary data that has been collected or already existed. For example data published in News paper, Books, You tube Channels, News Channel, GOI websites and Magazines etc. The Article paper focused on the Forest Right Act -2006 its significance and challenges faced by Forest dwellers throughout country.

Objectives:

- 1) To understand the Supreme Court Order on 13th Feb 2019.
- 2) To understand Forest Right Act 2006.
- 3) To understand role of Indian Constitution protecting Scheduled Tribes.

India is a Democratic Country in which 104,545,716 Scheduled Tribes are living across the country due to challenging petition by several wild life groups and Supreme Court order 2019 made few changes in the life of scheduled Tribes.

✚ **On 13th Feb 2019 Supreme Court made eviction order was passed the** order going to impact near to 12 lakhs tribes who are living under the Forest but the Ministry of Tribal Affairs seeking modification the Apex court agreed to put hold on evection order, around 17 states that rejected claims of Forest dwellers those are Andhra Pradesh, Assam, Bihar, Chhattisgarh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Telangana, Tripura, Uttarakhand, Uttar Pradesh and West Bengal based on these report there judge bench of Supreme Court directed chief Secretaries of sates to ensure eviction of all those persons from Forest land whose claims under Forest Right Act, 2006 have beer rejected on or before July 24

Ministry of Tribal Affairs urged Supreme Court direct sates to file detained affidavits on procedure followed while examining claims and details regarding rejection till this was done the eviction of forest dwellers be put on hold. The Ministry also explains that forest dwellers extremely poor and illiterate, difficult for them to substantiate their claims before component authorities.

✚ Forest Right Act, 2006:

The Act enacted to protect rights of the Forest Tribal Communities to land other recourses of forest which are essential for the lively hood, the Forest Right, Act also gives forest right to use minor use forest along with community rights, the forest right holders protect and conserve biodiversity, wild life as well as forest recourses.



The act also provides Right of ownership, access to collect, to use and dispose of minor forest produce which has been traditionally collected within or outside village boundaries, right to protect, regenerate or conserve any community forest recourses which they have been traditionally protecting and conserving for sustainable use along with rights Dwellers has to perform certain duties such as to protect wild life, forest and biodiversity, ensure that habitat of forest dwellers is preserved from any form of distractive are complied with.

Challenges faced by Tribal's and Forest Dwellers and steps taken by Government to remove it.

- a) Majority of Tribes leaves below poverty line.
- b) Tribal population suffers from chronic infection, diseases.
- c) Tribal face issues of development, integration, autonomy.
- d) Tribes are exploited by mining.

To understand role of Indian Constitution protecting Scheduled Tribes.

The Constitution provides for the special provisions relating to the Scheduled Tribes.

- A) Article No 342 lays down that president may specify the tribes or tribal communities or part of groups within tribes or tribal communities or part which shall be deemed scheduled tribes.
- B) Article 164 provides for a Ministry of Tribal Welfare in each of the state of Bihar, Madhya Pradesh and Orissa which are having large constriction of scheduled tribes.
- C) Article 244 provides for 5th schedule in the Constitution incorporating provides for the administration of Scheduled areas and tribes of the states which have sizable tribal population. Constitution prescribes protection and safeguards for scheduled tribes to promote their educational and economic interest.
- D) Article 330 and 332 of the Indian Constitution, seats have been reserved for scheduled Tribes in Lok Sabha and state Vidhan Sabhas.

Conclusion:

Scheduled Tribes are living outside from the modern city hence for that reasons they are already facing various problems they still have to be provided education, training, households, medical facilities etc so the Government of India working for their all around development by trying to provide all of these facilities and to improve their conditions.

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Impact of Skill Development on Employment Generation in India: Issues and Challenges

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Abstract: *Breaking the vicious circle of poor education, low productivity and persistent poverty is crucial for promoting inclusive economic growth and decent jobs for all. Globalisation and technological disruption put challenges as well as offer opportunities for economic expansion and job creation. Our aim is to become the future skill capital of the world. India being the youngest nation with more than 62% of its population in working age group of 15-59 years and more than 54% of its total population below 25 years of age. 12 million youth are added to the workforce every year. To take the best use of this young generation for economic development skill training is necessary. Skill training is therefore essential for sustainable development and it also transforms economy into informal to formal economy. So the government has taken many skill development initiatives for skill development. But the mission of workforce development in India facing many challenges of globalization and competitiveness and also major hurdles of achieving India as a knowledge economy are low literacy, lack of skill training, poor quality of training and low quality training infrastructure because of these problems we are not reaching our targets in skill training. Therefore, there is a need to create a public policy design to impart vocational education and skill training flexible, sustainable inclusive and creative. The present paper focuses on impact of skill training and vocational education in employment generation and issues and challenges of skill training and workforce development in India and suggest policy measures to increase employment opportunities in India.*

Key Words: *Skills, Training, Challenges, Vocational training, opportunities, development, productivity, demography, knowledge, workforce.*

INTRODUCTION :

Skills and knowledge are driving forces of economic growth and social development of any country. Countries with higher levels and better standards of skills adjust more effectively to the challenges and opportunities in domestic and international job markets. According to International Labour Organization, education, vocational training and lifelong learning are central pillars of employability. As compared to other developed and developing countries, India has a unique window of opportunity for another 20-25 years called the "Demographic advantage". If India is able to skill its people with the requisite life skills, job skills and entrepreneurial skills India will become knowledge economy in the world. Skills increase job opportunity in all sectors of economy and helps to gain confidence and improve productivity. Skill has the power to break the vicious circle of poverty by improving employability, productivity and helping sustainable enterprise development and inclusive growth. As it empowers an individual to become economically independent and convert human into human resource. The increase in productivity is due to availability of skilled and healthy manpower. The linking of skills and productivity would not only benefit individual but also benefit to enterprise, society and economy. In India majority of people are working in unorganized sectors. They don't have proper skills which directly affect productivity and revenue of country. So there is a need to take steps towards this issue. The government of India has taken many skill development initiatives and started vocational training and set up skill training organisations. Still result is not satisfactory. Indian skill market is facing many challenges. Here we are discussing about Indian skill development system, its challenges and suggestions to improve workforce.

Study Aims

The main aim of this study is to analyse the impact of skill training on employment generation in India and also to know the current scenario of skill development and skill training initiatives of India and to focus on challenges of skill training and suggest remedial measures.

**Objectives :**

- 1-To understand the present status of skill development in India.
- 2-To study the impact of skill training on employment.
- 3-To analyse the skill development initiatives taken by government of India.
- 4-To examine the challenges with respect to skill development in India.
- 5- To suggest policy measures for skill development.

LITERATURE REVIEW:

1-Manoj Kumar (2015) “Skilling India; An Indian Perspective in the global Context” paper tries to discuss the critical issues and challenges pertaining to skill development in India. According to global statistics India has 2% of skilled workforce in total working population. And discussed various issues like employability, graduation, economic growth and social development through skill development initiatives.

2-Vandana Saini (2015) studied about the current scenario of skill development and need of skill training. for developing countries like India and discussed skill training issues and concluded with proper suggestions.

3-Anita sing and Rinku Sanjeev(2016)studied importance of skilling and re-skilling towards make in India initiative and the study focused on how skill training and re-skilling helps to increase employees performance and analysed factors affecting employment generation.

4-Rupam Jyothi and Bhavika Bhatra(2016) analysed the scope of skill development ,employability of Indian workforce in context of Make in India. and the paper has discussed about generating employment through skill training and focused on various skill development initiatives and skill policies taken by government of India. And explained challenges of skilling India. Finally concluded with Indian should be skilled through vocational training and technical training.

METHODOLOGY

The study is entirely based on secondary data collected from various government publications like reports of ministry of skill development and entrepreneurship, ministry of labour and employment, census, NSSO, skill India report, journals, articles, and websites.

Discussion, Analysis and Results**A) Present Status of Skill Development in India**

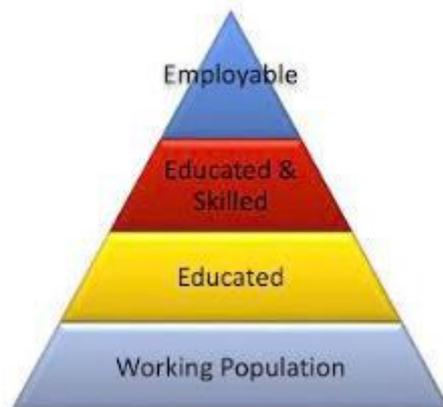
Toda India is one of the youngest nations in the world within more than 62% of its population in the working age group (15-59), and more than 54% of its population below 25 years of age. Its population pyramid is expected to bulge across the 15-59 age group over the next decade. It is further estimated that the average age of the population in India by 2022 will be 29 years as against 40 years in USA,46 years in Europe and 47 years in Japan. In fact during the next 20 years the labour force in the industrialized world is expected to decline by 4%, while in India it will increase by 32%.this is a big challenge as well as opportunity. India needs to equip its workforce with employable skills and knowledge so that they can contribute substantively to the economic growth of the country. And also it is extremely important to work towards creating a skilled workforce to reap the demographic dividend.

The country however has a big challenge ahead as it is estimated that only 4.69%of the total workforce in India has undergone formal skill training as compared to 68% in UK, 75%in Germany ,52% in USA,80% in Japan and 96%in south Korea. In addition about 12 million youth join the workforce every year. Assuming 90%male and 30% female. And 90% of labours working in unorganized sectors and only 10% working in formal sectors. On the other hand, according to a recent survey 48%of Indian employers reported difficulties filling job vacancies due to skill shortage. And the CMIE report shows that the more educated Indians are, the more likely they are to remain unemployed too. In 2018, 33% of formally trained 15-29 years old were jobless. Therefore to increase the productivity and for economic and social growth skill training is necessary.

In India youth unemployment rate in 2019 was 22.74% it has increased 24.90% in 2020 and it has increased 28.26% in 2021.

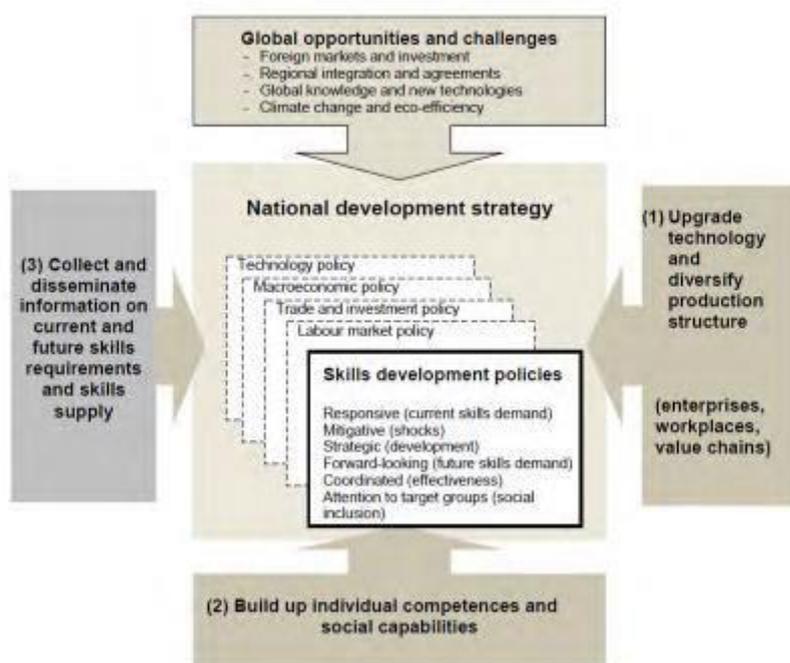


Fig 1.1: Workforce Pyramid



The above figure shows in India working population is huge in number but educated population is less compared to that and educated and skilled labours are very less and only few have employability skills and get employed.

Fig1.2 Skill Development Strategy for Employment Productivity and Sustainable Development



Source: (International Labour Organization, 2008, p. 11).

The above figure shows how skill training helps to get employment and increased productivity and reach the goal of sustainable development of country.

B) Skill Development Initiatives In India

Providing skills to the labour force and facilitating employment has been one key mandate within India's national development agenda. Skill has the power to break the vicious circle of poverty as it empowers an individual to become economically independent. Skill converts a human into a human resource. Presently India facing non employability of large sections of the conventionally educated youth, who possesses little or no job skills. Therefore skill development is great need for overall development of a country. so government has taken many steps for skill development .According to the world trade Organization ,the GDP level can increase up to 3%-5% in 2035 ,if India focuses on skill development and training initiatives. The formal skill training in India was marked by the setting up of first Industrial Training Institute in 1969 by the ministry of labour and employment similar moves to formalize and regulate technical and vocational education and training institutes for higher level skills continued in 1980s and 1990s.

Skill Development Eco System in India
 1969- First Industrial Training Institute



2008 –National council on skill development
2008-National skill development co-ordination board
2009- National skill development corporation
2009-First national policy on skill development
2013-National skill qualification framework
2014-Ministry of skill development and Entrepreneurship
2015-Skill India Mission

The ministry of Skill development and Entrepreneurship (MSDE) is accountable for coordinating skill development activities in India. It has supported various organizations like national skill Development corporation(NSDC),which aims to promote skill development in the country by establishing institutes across the country and National skill development agency(NSDA)which seeks to co-ordinate the efforts of the government and private sectors and aid in skill development. Skill India mission aims to train over 40 crore people in India in different skills by 2022.The mission seeks to vocational training and certification of Indian youth for better livelihood and respect in the society. Various initiatives under this campaign are National skill development mission, National policy for skill development and entrepreneurship, Pradhan Mantri Kaushalya Vikas Yojana, Skill loan schemes, Rural India skills, SANKALP and other skill development initiatives. Establishment of 1500 new ITIs through the DGET, establishment of 50,000 skill development centers through DGET. Apart from the initiatives mentioned earlier 17 other ministries of government of India are also engaged in skill development activities these include following ministries,

- 1-Ministry of textiles
- 2-Ministry of rural development
- 3-Ministry of human resource development
- 4-Ministry of urban development and poverty alleviation
- 5-Ministry of MSME
- 6-Ministry of food processing industries

Totally skill development efforts in India are spread across approximately 20 separate ministries and 35 state governments and union territories and the private sector.

Despite of more than 40 skill development programmes implemented by 20 ministries and government of India the growth chart is not as expected.

But the target of skill India was to reach out to 300 million young people by 2022, but only 25 million had been trained under these scheme by the end of 2018.This is partly due to mismanagement and partly due to not spending available funds because of lack of candidates. Even though who have been trained under skill India and PMKVY are unable to find jobs. The number of those who have benefited from the skill India scheme has increased from 3,50,000 in 2016-17 to 1.6 million in 2017-18,but the percentage of those who could find a job upon completion of their training has dropped from more than 50% to 30% and under PMKVY ,only 15% of those trained got a job. The pace of development has been facing a series of challenges they are as follows.

C) Skill Development Challenges in India

1-Limited Capacity

Existing capacity of infrastructure both physical and human inadequate. Considering the projected demand for skilled labours. every year 12 million persons adding to workforce but presently skilling capacity in India is around 4.3 million persons per annum. there was need to upgrade this capacity around 15 million persons per annum.

2-Low Student Mobilization

The enrolment in skill institutes like polytechnics and ITIs remain low as compared to their enrolment capacity. Main reason for low student mobilization is orthodox thinking, reluctant to migrate and low salaries at entry level and vocational training not considered desirable by students as they prefer regular degree and formal education.

3-Awareness, Mindset and Perception Issue

Many people in India are not aware of skill training. In India majority of people are illiterate and nearly 65% of people still living in rural areas so they are less aware about government programmes. And skill training is often viewed as the last resort means for those who have not been able to progress in formal academic system.

4-Cost Concerns



Skill development initiatives in India largely dependent upon government funds or NGO's and public private ventures. Almost skill training institutes need high capital requirements and returns also very low. So they are looked as a non-scalable model and remained underinvested.

5-Quality Concerns

The issue relates to the quality of infrastructure, trainers as well as curricula and pedagogy .there is a lack of machinery to give students hands on training and course curricula also outdated and non-standardize.

6-Low Industry Interface

Industry interface is very essential for skill training institutes as it helps in the assessment of demand for skills in the local region and thus updating of course content and it also has a strong image in the minds of the students as it ensures them that the course curriculum is in relevance with the practical industry requirements. Most of the training institutes have low industry interface as a result the performance of skill training sector is poor in terms of placement records and salaries offered.

7- Unorganized Sector

In India more than 90% of workforce is in informal sector and it is difficult to map existing skills in the unorganized sector and gauge the skilling requirement.

8-Lack of Women Participation

As women constitute almost half of the demographic dividend the key challenge here is to increase their participation in the country's labour force which is directly related to social development and economic growth of the country.

D) SUGGESTIONS TO IMPROVE SKILL TRAINING

1-Improve Skilling Infrastructure

Number of industrial training institutes has to be increased in rural area and backward areas.

And the capacity and quality of training providers should be improved. A common platform for collaboration amongst private sector employers training providers and the labour force should be created.

2-Private Sector Participation

To overcome the cost concerns private sector initiatives for skill development should be enhanced and supported.

3-Recognition of Prior Learning

The informal training should be restructured so as to certify the skills level of workers who have inherited those skills from their ancestors. Incentives in terms of skill premium can be considered.

4-Inclusiveness

Alongside increasing the women participation in skill training the government should ensure that the skilling needs of the socially and geographically disadvantaged and marginalized groups(SC,ST) Minorities, Transgenderes and differently abled persons are appropriately taken care of.

5-Revise Course Content

The curriculum should be update according to need. Updating the curriculum to incorporate the latest trends will help students to be updated in job market.

6-Proper Labour Market Information System

In order to estimate the existing skills in unorganized sector and gauge the skilling requirement in future it is necessary to have sufficient data which will help policy makers in policy making.

7-Enhanced Expenditure on Skill Training

Government should allocate more funds for different sectors of skill training.

8-Evaluation of Training Institutes

NSDC should also develop some techniques to evaluate the performance of training institutes and encourage them to perform better.

9-Skill Surveys

Surveys can be conducted to find the exact skill requirements from the employers .Analysis of such surveys would help in designing course structure of the training programmes and thus standardize course curriculum and training delivery system can be developed.

10-Complicated rules should be avoided

Excessive complicated rules and regulations for approval should be avoided. And give more opportunities to NGOs as they would help reach better in shortest time as possible.

CONCLUSION:

As India moves progressively becoming a knowledge economy it becomes increasingly important that the country should focus on advancement of skills and these skills have to be relevant to the emerging economic environment.



Skilling manpower is very important in development of the country like India where unemployment and poverty are the challenging issues. As skill training is directly related to increase in rate of employment, enable the youth to get proper jobs as per need and improve employment scenario within rural demography and encourage women workforce in all sectors of economy, Increase in productivity and increase in GDP. Considering these importance of skill training various skill programmes have been initiated by the government of India. And also has formed various organizations at national and state level to take the responsibility of skill development. Still they are facing the problems like unequal access, poor quality of infrastructure, inadequacy of faculty improvement programmes and lack of relevance. Because of these reasons not reaching skill targets so the government should increase funds on skill training and skill curriculum and infrastructure should revised and increase industry and academia contact like this Government, private sector and NGOs should work hand in hand and put lot more effort to develop skill culture in India so as to reach the goals of employment generation, social development, sustainable development and economic growth of the country.

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Schemes Provided for Development of Women Entrepreneurs in Kalyan Karnataka Region: A study with Reference to Select Financial Institutions

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Abstract: *There is a change in the demographic characteristics of the business and economic growth of the country due to the increasing presence of women as entrepreneurs. Women-owned business enterprises are playing an important role in society. These enterprises are inspiring others and generating more employment opportunities in the country.¹ Various financial institutions help and support women's entrepreneurs in Kalyan Karnataka such as Karnataka State Financial Corporation (KSFC), Karnataka State Women's Development Corporation (KSWDC), and District Industries Centers (DIC).*

The Present Paper focused on various government schemes Provided for the development of women entrepreneurs in Kalyan Karnataka Region of Karnataka State.

Key Words: *Women Entrepreneur, Schemes, Institutions, KSFC, KSWDC, DIC.*

INTRODUCTION :

Women Entrepreneurs are those women or a group of women who innovate, initiate, organize and run a business concern. According to the Government of India, a women entrepreneur is defined as an enterprise owned and managed by women having a minimum financial interest of 51% of the capital and giving at least 51% of the employment generated in the enterprise to women. One-third of the business undertakings are run by women entrepreneurs in the world. In India, so many initiatives were taken to support the growth of women entrepreneurs. Special schemes like stand-up India and startup India are used to promote entrepreneurial drive among women in India¹. Union Minister for MSME and road transport and Highways Shri Nitin Gadkari has said that at present in our country 80 lakh women entrepreneurs are there in the MSME sector and there is an increase in the women entrepreneurs of about 38% in the last 5 years and totally 3.13 lakh women are benefited from the schemes which are implemented by the ministry of MSME during the last five years. 25% subsidy is being given to women entrepreneurs in urban areas and 35% subsidy in rural areas. Women entrepreneurs can take maximum benefits from the portal 'MSME SAMBANDH' and 'UDHYAM SAKHI'.² Totally 13.5 to 15.7 million women-owned enterprises are there in India. Which represents 20% of all enterprises. These enterprises have provided employment opportunities to approximately 22 to 27 million people. From now until 2030, the quality and quantity of entrepreneurship can create over 30 million women-owned Enterprises and can generate 150 to 170 million jobs which are more than 25% of new jobs required for the entire working population.

Table 1.1: Acceleration of Women Entrepreneurship in India

Particulars	Today	Up to the Year 2030
Number of women-owned enterprises	13.5-15.7 Million	Over 30 Million
women-owned enterprises as a percentage of total enterprises	17-20%	33%
Percentage of women-owned enterprises with hired workers	20%	40%
Employment per women-owned enterprise with hired workers	3.7	4.5

Source: www.bain.com

¹ www.yourarticlelibrary.com

² www.pib.gov.in



The former Chief Minister B. S. Yediyurappa announced a few initiatives to encourage and promote women entrepreneurs in Karnataka. He said that women entrepreneurs in hospital Wellness and other services will be provided with the loan facility up to 2 crores at a subsidized rate of 04% through the women development board or Karnataka state financial corporation.³ Karnataka large and medium industries Minister Murugesh nirani said that Karnataka is the first state to announce an exclusive industrial Park dedicated to women in Kalaburagi, Mysore, Dharwad, and Harohalli. He also said that 'Our Udyami Aagu' and 'Udyoga Needu' programs are aimed at promoting entrepreneurship among the youths in Karnataka.⁴

1.2: Literature Review:

Bowen and Hirrich (1986)⁵ have developed the comprehensive career model that adopts the career perspective and life cycle approach to an entrepreneurial career in terms of the educational environment, adult development history, adult family work history, career work situation, and current perspective family non-work situation.

Bygrave, W. D., & Hofer, C. W. (2005)⁶ has found that the need for achievement training for achievement motivation has been limited to program person who could afford the time and monetary cost of the longer training sessions. He found that the system substantially shortened training design, when combined with skill training, demonstrated many of the effects and benefits of the original need for achievement training among the sample studied.

Goffe, R., & Scase, R. (2008)⁷ found that how business startup enables many women, but not all, to achieve forms of economic and social independence that they would not otherwise enjoy. Further, they illustrate how business proprietorship has a wide variety of effects upon individuals and their relationships and lifestyles.

Catherine, M. (2008)⁸ revealed that a poor choice of a business venture often meant that they run at a loss. However, many women value their business for non-financial reasons, such as the fact that they get them out of the house. Though women running micro-enterprises face long hours with low returns and often accumulate debts they are critical for the survival of their households.

Hansraj (2009)⁹ discusses two Innovative approaches to fostering group entrepreneurship to address the urgent employment and income needs of Urban and rural workers in developing countries and countries undergoing privatization and structural changes. The study concludes that group entrepreneurship provides the basis for dynamic employment and enterprise development strategy.

1.3: Objectives:

- a. To study the government schemes for women entrepreneurs in India.
- b. To know the various institutions that support women entrepreneurs in Karnataka.

1.4: Methodology:

The present study is based on secondary sources of information and this information was collected from various reports, websites, textbooks, journals, articles, thesis, research papers, etc.

1.5: Government Schemes for Development of Women Entrepreneurs In India

- a. **Annapurna Scheme:** This type of loan is provided to women entrepreneurs in the food catering industry. Women entrepreneurs can use this loan amount as capital to meet their requirements like setting up trucks, buying types of equipment and utensils, etc. The loan limit under the scheme is Rs. 50,000. It is one of the most common businesses that women can start to manage their lives.
- b. **Bharatiya Mahila Bank Business Loan:** This scheme supports women entrepreneurs on the large scale. The loan limit under this scheme is Rs. 20 crores. This bank scheme provides economic empowerment to women.
- c. **Mudra Yojana Scheme:** The main motto of this scheme is to improve the status of women in the country. This scheme provides business loans and supports women entrepreneurs so that they can be financially independent and self-reliant. The loan limit under the scheme is Rs. 10 lakhs
- d. **Orient Mahila Vikas Yojana Scheme:** This scheme helps women entrepreneurs to expand their businesses. It is especially meant for those women who hold 51% share capital separately or collectively as a proprietary concern.

³ www.thehindu.com

⁴ www.indianexpress.com

⁵ Bowen, D. D., & Hisrich, R. D. (1986). The female entrepreneur: A career development prospective academy of management review. 11(2).

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The loan limit under this scheme is Rs. 25 lakhs. It provides loans at a concessional interest rate of up to 2% and the repayment is flexible up to 7 years.

- e. **Dena Shakti Scheme:** This scheme is limited only to those women who are in small Enterprises and microcredit organizations such as agriculture, retail, and manufacturing. The loan limit under this scheme is Rs. 20 lakhs
- f. **Pradhan Mantri Rojgar Yojana:** This is the best scheme for women entrepreneurs both socially and financially. It covers both rural and urban areas and the loan Subsidy amount under this scheme is up to 15% of the project cost with an upper ceiling of Rs. 12,500 for the borrower. This scheme applies to all types of ventures in industries. Under this scheme the loan limit for business is Rs. 2 lakh and for service and industries 5 lakh.
- g. **Udyogini Scheme:** This scheme encourages and supports women entrepreneurs by providing Loans at the best rate of interest. It is valid only for those women entrepreneurs who have a family income of less than Rs. 40,000 per annum. The loan limit under this scheme is Rs. 1 lakh.
- h. **Cent Kalyani Scheme:** This scheme is meant for those women entrepreneurs who want to start a new business and also for those who want to grow and expand their business. This loan is a Collateral free loan and the loan limit under the scheme is 100 lakhs.
- i. **Mahila Udyam Nidhi Scheme:** This scheme promotes MSME and small business concerns to grow and expand in their areas. The loan limit under this scheme is Rs. 10 lakh and the repayment period is 10 years.¹⁰

1.6: Various Institutions that Supports Women Entrepreneurs In Karnataka

1.6.1: Karnataka State Women Development Corporation (KSWDC)

Karnataka state women's Development Corporation was established in the year 1987 under the Companies Act of 1956. The main aim of this is to improve the social and economic conditions of women belonging to the weaker section, Literate and backward class of the society.

State Government-sponsored schemes implemented by KSWDC

- a) **Udyogini Scheme:** This scheme provides loan facilities to women entrepreneurs from the bank. Under the general category, the loan is provided to those women whose family income should be less than 40,000 and their age should be between 18 to 45 years. The main objective of this scheme is to avoid women to take a loan from private money lenders and other financial institutions at a high rate of interest. For women belonging to the special category widowed, the general category maximum unit cost is Rs. 1.00 lakh. Subsidy for special category Women is 30% or maximum Rs. 10,000/- and subsidy for general category is 20% of maximum Rs. 7,500/-.
- b) **Women Training Program:** Under this program women belonging to the weaker section are provided with skill development training to take up self-employment in various fields. The age limit should be between 18 to 45 years and the annual family income should be 40,000. There is no income limit is fixed for Windows, physically handicapped, and sc-st women.
- c) **Marketing assistance scheme:** State-level exhibitions are conducted on the eve of International Women's Day to help women entrepreneurs to sell their products. These are exhibitions are conducted at the district and taluka levels.
- d) **State Resource Centre (SRC):** These are the counseling centers that conduct special training programs which create awareness about various government schemes among women.
- e) **Micro Credit:** An interest-free loan of Rs. 1 lakh to 2 lakh is provided to Stree Shakti self-help groups to start their entrepreneurship.
- f) **Chetna (rehabilitation of sex workers):** Under this scheme financial assistance of Rs. 50,000 i.e. Rs. 25,000 as loan and Rs. 25,000 as the incentive is given to the sex worker to lead a decent and dignified life and for self-employment.
- g) **Rehabilitation of transgender:** Under this scheme financial assistance of Rs. 50,000 i.e. Rs. 25,000 as loan and Rs. 25,000 as the incentive is given to transgender for self-employment and other income-generating activities.
- h) **Interest Subsidy Scheme to Women Entrepreneurs:** This scheme is implemented from the year 2016-17. Under this scheme, women are provided with a loan of rupees 5 lakh to 200 lakh from Karnataka state financial corporation to start small and medium industries. The loan is given at an interest rate of 14% out of which 10% interest will be paid by Karnataka state women's Development Corporation. 12 months leisure period is fixed for repayment of the principal amount. The interest subsidy will be applicable for a total period of 5 years from the date of sanction of the loan.

¹⁰ www.indifi.com



- i) **Samrudhi scheme:** This scheme is implemented from 2016-17. Under this scheme financial assistance of Rs. 50,000 i.e. Rs. 25,000 as loan and Rs. 25,000 as the incentive is being given to those women who are HIV infected, to start income-generating activities and Rs. 10,000 is being given to women street vendors.
- j) **Saviruchi:** This scheme is implemented from 2017-18 to encourage district Sreeshakthi federations and it was launched on 27th February 2018. Under this scheme, each Sreeshakthi Federation is provided with a 10 lakhs interest-free loan.¹¹

1.6.2: Karnataka State Financial Corporation (KSFC)

Karnataka State Financial Corporation was incorporated by the erstwhile state of Mysore in 1959 under section 3 (1) of the State Financial Corporation Act 1951. KSFC provides financial assistance to entrepreneurs for starting small and medium scale industrial units especially in industrially backward areas in the state. Karnataka State Financial Corporation was launched with an authorized share capital of Rs. 2 crores. Many central financial institutions like IDBI refinanced up to 80% of the loan to KSFC. Small Industries Development Bank of India took over the role of IDBI in 2004 when IDBI stopped refinancing KSFC in its intention to become a full-fledged bank.¹² The interest subsidy scheme for Women entrepreneurs is one of the important schemes of the Karnataka State Financial Corporation. The main objective of this scheme is to encourage women entrepreneurs to start small and medium and enterprises in the manufacturing and service sectors. KSFC acts as a nodal agent which provides financial assistance to women entrepreneurs for setting up a new business and for expansion and modernization of existing units. The minimum financial assistance provided by KSFC is 5 lakh and the maximum is 50 lakh. The ownership of eligible units should rest with the women entrepreneurs. Women entrepreneurs should hold 51% of the share in the case of a partnership firm. The rate of interest is 4%. These business units will be eligible for interest subsidy for 5 years only from the date of the first disbursement of the loan including the Moratorium period.¹³ Mysore Industries Association said that women entrepreneurs will get loans from KSFC at 4% interest up to 50 lakh which intern receives financial assistance from Karnataka state women's Development Corporation.¹⁴

1.6.3: District Industries Centres (DIC)

District Industries Centre was established in 1978. To promote tiny, Cottages, village, and small-scale industries in small towns, District Industries Centre program was initiated by the central government. DICs under the Directorate of Industries and Commerce provide subsidy loans to young professionals under the guidance of the Ministry Of Social justice and Empowerment. The main objective of DICs is to create employment opportunities in rural areas of India. These DICs are managed and operated at the district level to provide the necessary support to entrepreneurs to start their own micro small and medium enterprises

The main functions of DICs are as follows

- a. Recognizing and financially supporting new entrepreneurs
- b. Preparation of feasibility report
- c. Arrangements for credit facilities, machinery, and equipment
- d. Providing financial support to small units
- e. Providing raw materials
- f. Development and expansion of industrial units

To create awareness and to provide skill training for women to create opportunities for the establishment of small industries, the Rural Industries Program has been conducted by AWAKE (Association of Women Entrepreneurs of Karnataka) in Koppal and Gulbarga district.¹⁵

CONCLUSION:

To make women independent and self-reliant, the government at various levels provides facilities for women's entrepreneurship development. Finance is the lifeblood of any enterprise. In India, many women entrepreneurs suffer from a shortage of finance. That is why there are so many financial institutions such as KSWDC, KSFC and DICs provide financial support to women entrepreneurs to set tiny, small, and medium scale business units.

¹¹ www.bangalorerural.nic.in

¹² www.deccanherald.com

¹³ www.ksfc.karnataka.gov.in

¹⁴ www.thehindu.com

¹⁵ www.awakeindia.org.in



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Impact of Climate Change on Agriculture: Special Reference to Karnataka

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Abstract: Agriculture is backbone for India, in which around 70 percent of the population rely on this for their livelihood, especially rural people and it gives food security to the country with produce mainly rice, wheat, maize, millets, pulses and commercial crops. This sector occupied almost 43 percent of India's total geographical area. Karnataka state is highly dependent on rain fed agriculture especially in northern interior districts and more number of Small and marginal farmers. The state received normal rainfall 1248 mm. But in recent years it prone severe drought, which directly affect to farmers who depends only on agriculture and because of this they fall in vulnerable. Causes for agriculture distress are many and many studies point out that the causes of agricultural distress due to policy failure, socio-economic conditions of the farmers and how they adopt coping strategies to deal with an agriculture distress. But this study attempts impact of climate change on agriculture

This study is purely based on secondary base data, collected from several Government reports and used simple statistical tools for analysing data. The study found out that drought prone years in Karnataka during 2002, 2003, 2012-13 and 2015, in these years the yield of agricultural food grains declined drastically. The level of ground water declined as increasing net irrigated area, which because of the free electricity and subsidy for irrigation. It implies that the overexploitation of ground water. Whole India's temperature shows increasing trend especially in Karnataka. It shows in northern interior districts prone to higher temperature. These all-climatic changes impact directly to the agriculture yield level and make them more vulnerable. Some farmers adopt coping strategies such as change in sowing time, cropping pattern, migration etc, but these measures solve the problems in short run but in the long run farmers face again same crisis. So the study found out some sustained reliefs which are, give temperature resistant seeds to farmers, government intervention to regulate the agricultural price fluctuation, reduce exploitation of ground water, give new technologies which are inexpensive for farmers, introduce system of organic farming and give awareness to farmers relating to this and take action to reduce burning fossil fuel which is the cause for an increasing temperature and this study also spoke about take research and rural level conferences to save trees, importance of environmental resources and how to conserve these.

Key Words: Agriculture, Distress, Climate change and Vulnerability.

INTRODUCTION :

70 percent of Indian population depending on agriculture for means of life directly or indirectly, which highly rely on rainfall. Many Indians maintains their livelihood by agriculture especially in rural areas (58 percent), which contributes around 17-18 percent to the country's GDP. Agriculture sector in India has occupied almost 43 percent of its geographical area. Indian agriculture produces food crops and commercial crops, mainly rice, wheat, maize, millets, pulses and sugarcane, tobacco, cotton, jute respectively. Fruits, vegetables, coffee, cocconut, tea, rubber etc also grown.

After introducing the green revolution (1966-67) the Indian agriculture involves new technology for sustain in food production and increase commercial crops as well. But after few decades, increases in chemical fertilizers, pesticides are caused decrease in soil fertility, which affect the productivity of the land. For this, India lose annually



about 5310 million tonnes of soil. On the other side, cost of production is high when use these new technology, especially small and marginal farmers, which again impact on their income. Uneven rainfall, continuous drought years are also severely impact on agriculture sector. Socio-economic conditions of the farmers decelerate due to these reasons and induce to committing suicide. According to national crime records bureau of India (2014) reported 5,650 farmers committed suicide.

Agriculture activities start with uncertain circumstances. Erratic rainfall, continuous drought years, Increasing temperature and declining ground water availability, decelerating soil fertility, turns food production into commercial crops, increased cost of production and at the same time fall prices of agricultural products in market, debt in banks and money lenders, increasing small and marginal farmers due to divide land between a brothers etc are major reasons for agrarian distress. Due to drought crop failure will affect on farmer directly who then unable to repay his debt and lead his minimum life, for these reasons he lastly loss his livelihood and life. There is also seen that failure of policy interventions. Like these several issues contributing to the agricultural distress. This study is going to examine reasons for agriculture distress especially in eye of environmental background.

REVIEW OF LITERATURE:

Several articles talked about the agrarian distress; here an attempt has been made to review the earlier studies.

Patnaik (2010) studied topic on Distress Situation in Dry land Areas Impacts on Livelihood Pattern and the Coping Strategies. This paper is a review of the different coping mechanisms adopted by the households in different dry land area of India. The primary focus of the present paper is to understand the coping mechanisms adopted by the households in the dry land areas to cope with the distress situations in India. The paper has two fold objectives; one is to understand the impact of drought on the livelihood of the people in the dry land areas. Secondly, the paper aims to understand the different mechanisms adopted by the households to avoid the distress situations. This paper suggest that for the policy framework the proper understanding of the local people's awareness, response, priorities and own coping strategies is needed. A household level analysis of the different coping mechanisms developed by the poor villagers might help in the policy analysis.

Venkateswarlu and Singh (2015) studied on climate change adaptation and mitigation strategies. Climate change impacts on agriculture have been dealt at several national and international fora wherein it has always been indicated as a vulnerable ecosystem to climate change and reports do indicate that these ecosystems to contribute to the growing CO₂ level in the atmosphere they also mentioned that these climatic conditions intensively affect on Indian agriculture especially in rural dry regions.

These reviewed articles deals with their own respective dimensions, many researchers have found the causes of agricultural distress due to policy failure, socio-economic conditions of the farmers and how they adopt coping strategies to deal with an agriculture distress. But very few articles mention about impact of climate change on agriculture distress especially increased temperature, declined rainfall and ground water availability. So this present study attempts to analyse the agricultural distress with reference to climate change.

METHODOLOGY:

This study is purely based on secondary data base. Source of data are collected by several Government reports of Agriculture Department, Directorate of Economics and Statistics, Bangalore, Karnataka State Natural Disaster Monitoring Centre (KSNDMC), Central Ground Water Board (CGWB), Ministry of Water Resources, Manual for Drought Management, Agriculture Statistics at a Glance, Heat Wave Action Plan 2018 etc., are used in this study. This study uses simple statistical tools like percentage, Growth rate, and averages for data analysis.

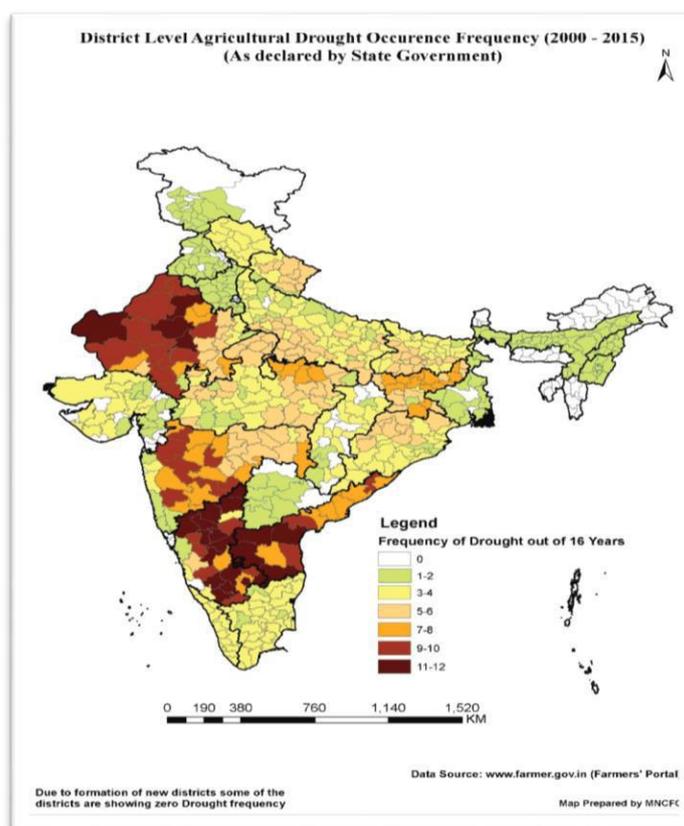
India is one of the most drought prone countries in the world. Over 75 percent of the cropped area is in the semi-arid tropics in the country (131 million out of 174 million hectare). 99 districts in 14 states are declared as drought prone districts by the Central Water Commission (2002). Most of them are concentrated in Andhra Pradesh, Maharashtra, Tamil Nadu, Rajasthan and Karnataka affecting 265 million people in the rural areas. Karnataka state is highly dependent on rain fed agriculture especially in northern interior districts and more number of Small and marginal farmers, these reasons make farmers life hard, which is second in drought among the states in India.

Deshpande (2002) note that the development of the agricultural sector in Karnataka thus began with seemingly formidable constraints in the form of large rain-fed areas, meagre irrigation, low value-low yield dominant cropping pattern and a large share of dependent population. Farmers in Karnataka are usually distressed due to uneven rain and continuous drought which affects the farmer's crop yield and livelihood. Therefore they become vulnerable. In Karnataka since 1970-71 patterns in number of operational holdings are changing drastically especially in marginal operational holdings (0.01 to 0.99 hectare) has increased by 30.4 percent to 49.1 percent in 2010-11, since the same

year for large operational holdings (10 hectares & above) is 6.2 percent to 0.9 percent respectively. This trend reveals us that the land is split between brothers, increasing involved population in agriculture and it also means that these marginal farmers are unable to buy new land. This trend negatively effect on crop sowing, use adequate technology, crop yield, farmers income etc. These small and marginal farmers get more vulnerable to uncertain events like drought, hike in mean temperature, flood etc.

In recent trend India is susceptible to successive drought years of 1966, 1987, 2002 and 2015. Crop yield of small and marginal farmers is loss in one hand; on the other hand the opportunities of the rural livelihoods in dry areas are loss. The map 1 shows the footprint of drought occurrences in districts between 2000 and 2015.

Map 1. District Level Agriculture Drought Occurrence Frequency (2000-2015)



Source: *Manual for Drought Management, December 2016*

It clearly clarify us that the frequency of drought is high (7-8 to 11-12) in Rajasthan, Karnataka, Maharashtra and Andhra Pradesh. Manual for Drought Management report (2016) Mentioned that the frequencies are derived from the number of occasions when droughts were declared in such districts by State Governments during the 15-year period, it is hoped that the map will help provide guidance to policy makers in identifying areas that are most susceptible to drought for the establishment of monitoring and early warning systems. This map unravels the fact that since 16 years, three-fourth of the Karnataka regions has experienced drought. This trend understand us directly to affect on farmers who belongs to rain fed and dry area, notably in north interior Karnataka (NIK). There is not denying irrigated area which is around 27 percent of total sown area. Extracting ground water is a big source of irrigation nowadays. But this method of irrigation is stress on ground water which decline further.

Data analysis:

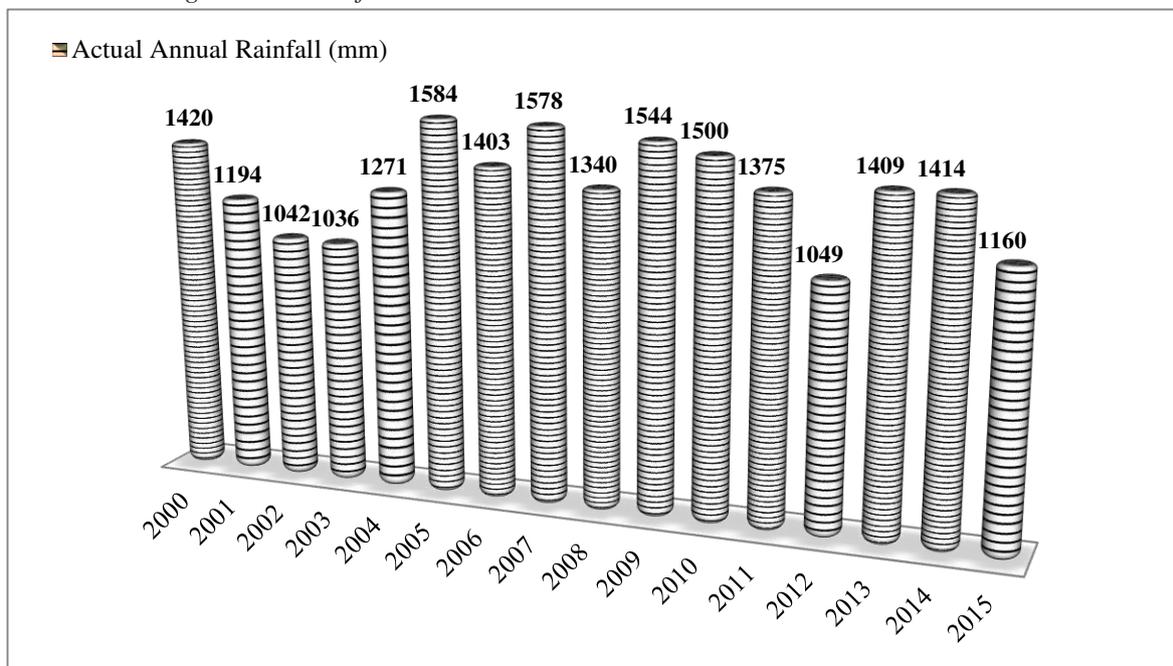
Rain fall is the most important factor that determined agriculture growth and sustainability. The average annual rainfall in Karnataka is 1248 mm. Most of rain fall occurred at the time of south west monsoon (June – September). Figure 1 demonstrates us that the actual rain fal in Karnataka from 2000 to 2015. This clearly shows that the years of 2002, 2003, 2012 and 2015 are severe drought prone years. This is most affect to the state economy especially north



interior Karnataka followed by south interior Karnataka. Recently the Government of Karnataka declared 156 of 176 taluks drought prone taluks.

Figure 1. Karnataka Actual Rainfall from 2000 to 2015

Note: The average annual rainfall in Karnataka is 1248 mm



Source: ARC Division DE&S

These drought years make farmers more vulnerable due to crop failure and significant decline in yield of production, in which they don't have any assets internal as well as external, so their coping up capacity and their socio-economic conditions decline.

There is another addressable point is the level of ground water, which is play important role in the country side, it also main source of irrigation. Over the years, there has been a decrease in surface water use and a continuous increase in ground water utilisation for irrigation (Suhag, 2016). Ground Water level is dependent on two major sources, one is rainfall and another source is that include canal seepage return flow from irrigation, seepage from water bodies and artificial recharge due to water conservation structures like rain water harvesting, farm ponds. The overall contribution of rainfall to country's Annual Replenishable Ground Water Resource is 67 percent and the share of other sources taken together is 33 percent (Central Ground Water Board). Table 1 reveals that year wise Karnataka's ground water availability and net irrigated are from 2005-06 to 2016-17. Ground water level was declined last six years, from 2010-11 ground water level is 15.3 bcm followed by 14.8 bcm in 2011-12. It also depict that the increasing net irrigated area which shows the stress on ground water resource. Subsidies for irrigation equipments and free supply of electricity are contributing to increase in numbers of the tube wells. Although in the year of 2011-12 net irrigated are declined 0.5 lakh hectares due to failure of bore wells caused by declined ground water availability.

Table 1. Karnataka ground water resources availability and net irrigated area

Year	Net Annual Ground Water Availability (in bcm)	Net Irrigated Area (in lakh hectares)
2005-06	15.3	29.7
2006-07	15.3	29.5
2007-08	15.3	31.3
2008-09	15.3	32.4
2009-10	15.3	33.9
2010-11	15.3	34.9
2011-12	14.8	34.4



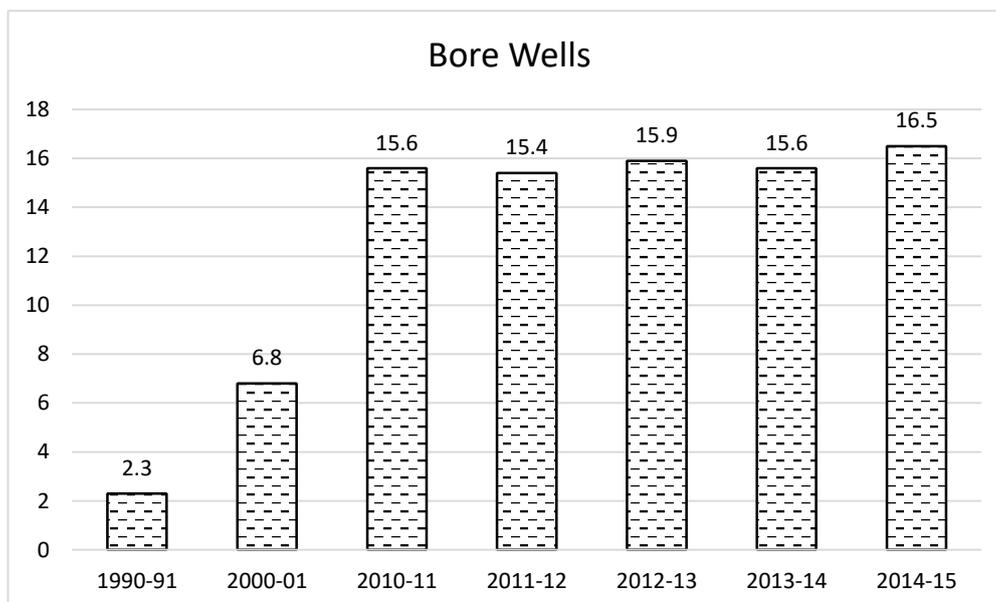
2012-13	14.8	34.2
2013-14	14.8	35.6
2014-15	14.8	35.9
2015-16	14.8	32.4
2016-17	14.8	No data

Source: *Central Ground Water Board and Directorate of Economics & Statistics, GoK*

It gives a future scenario that declined trend, because the exploitation of ground water, hike evaporation level due to increased mean temperature and reduced conservation is the main cause. Uneven rainfall is another reason for most of the irrigation relies on ground water and its exploitation.

Figure 2 exposed us that area irrigated under bore wells in Karnataka, which shows that since 1990-91 to 2014-15 only 2.3 lack hectare to 16.5 lack hectare increases. We can observe here that since 2010-11 the area under irrigation is meagrely increases. Due to less irrigation impact of drought harshly volatile the agriculture production and loss crop yield. Hence, climate change in terms of drought makes agriculture sensitive and vulnerable.

Figure 2. Area Irrigated under Bore wells in Karnataka (Area in Lakh hectares)



Source: *Annual Seasonal and Crop Report of DE&S, Bangalore.*

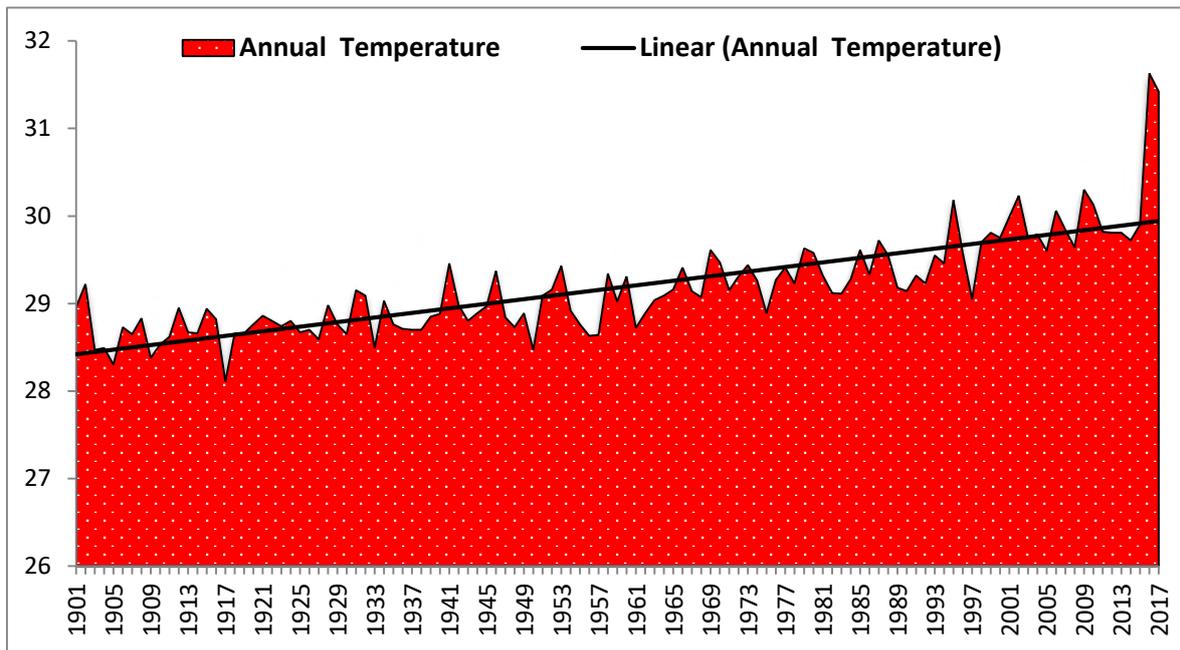
Agriculture distress is also affected by climate change in terms of an increase in average temperatures and increased possibilities of severe heat waves. Extreme heat can lead to dangerous, even deadly. As per World Meteorological Organization (WHO) heat wave is defined as “when the daily maximum temperature of more than five consecutive days exceeds the average maximum temperature by 5°C.” Increased carbon dioxide cause hike in mean temperature in atmosphere, due to this reason the climate is change.

We can see the India’s temperature since 1901 to 2017 in figure 3, in which average temperature up to 1950 was 28.9, from 1951 India start five year planes. So that, temperature starts increase up to 29 °C in 1960. After the 50 years this temperature increased almost 10 °C. This trend will make us worried about agriculture and farmers who is highly related with the climate.

These increased hot days negatively impact on agricultural food grain products, so this phenomenon will impact on the food security and price stability. Agarwal (2009) note that for every one degree increase in temperature, yields of wheat, soybean, mustard, groundnut and potato are expected to decline by 3 to 7 percent. Production of agriculture will decline in one side impact; on the other side, the cost of life leading of the farmers due to instability of price level will also increase.



Figure 3. All India Annual Temperature from 1901 to 2017

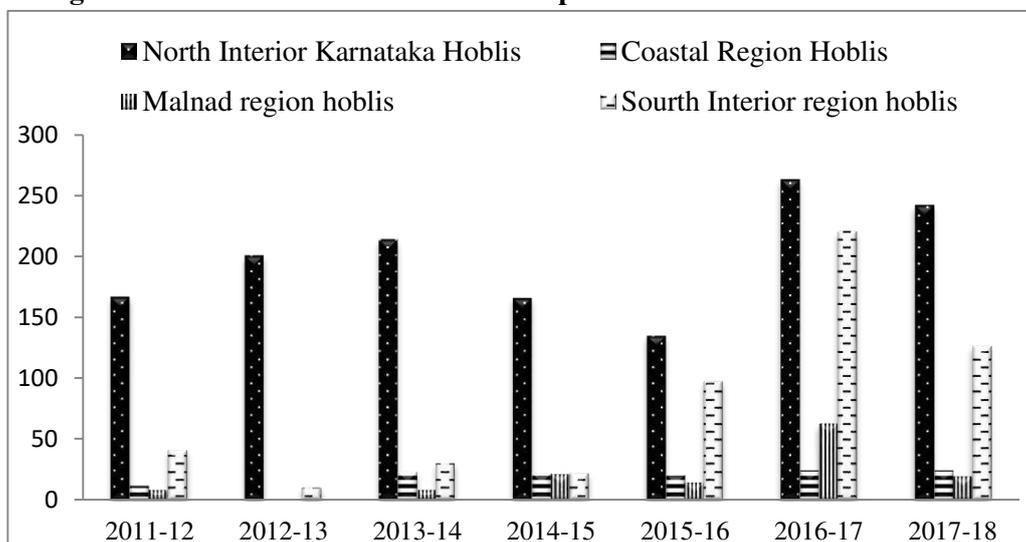


Source: Open Government Data (OGD) platform India

In Karnataka, this phenomenon depicted by Figure 4 which explains the number of hoblis in Karnataka recorded temperature from 2011-18. The hoblis belongs to north interior Karnataka (NIK) has more temperature followed by the south interior Karnataka (SIK). Deshpande (2002) point out that in the late 1990s farmer's suicides rocked the state and Andhra Pradesh especially in the Hyderabad Karnataka region. But in coastal area it reports very low temperature frequency. Northern Karnataka has high level of temperature compared to the other regions in. Mainly because of this region is called *Bayaluseeme*, which means plain area, where rainfall is also low compared to other regions. Most of the farmers in this region are dependent on rainfall, so them this increased temperature and low and uneven rain affects severely. So farmers unable to cope with this extreme weather related problems.

The temperature and drought are not a suddenly happened event, which are slowly occurring and attack severely. In recent decades drought turned into unbearable especially to the farmers who belongs to rain fed areas in dry regions. Farmers' crop yield is decline is one side; on the other side the livelihood opportunities of other non-agriculture sector are also decelerate.

Figure 4. Number of hoblis recorded temperature in Karnataka from 2011-18

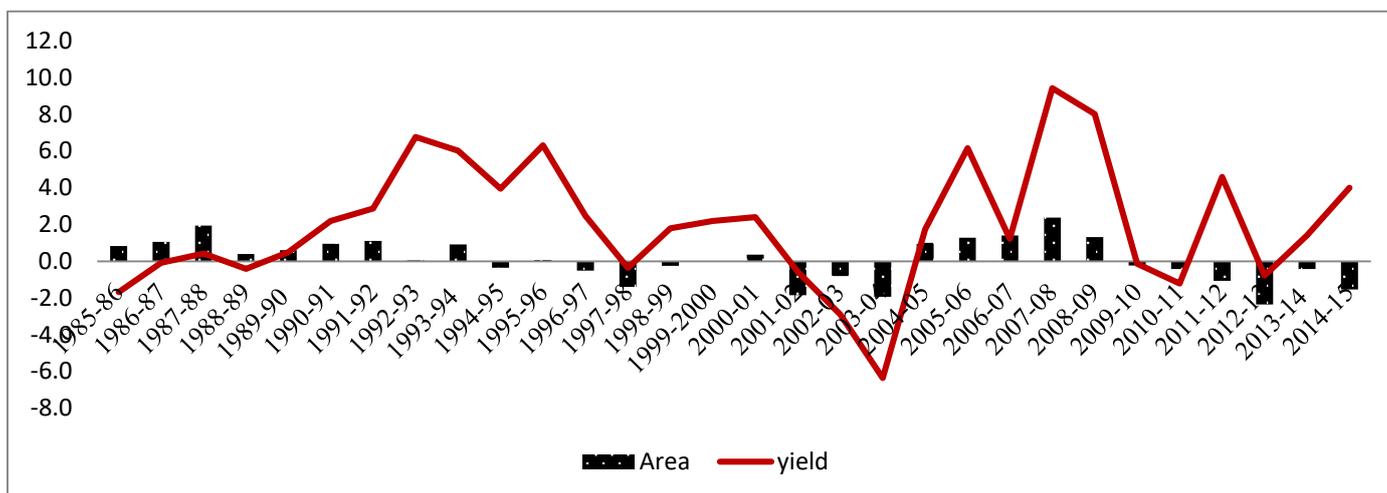


Source: Heat Wave Action Plan 2018



Figure 5 acquaint that the annual percentage change in area and crop yield of food grains from 1985-86 to 2014-15. The crop yield more response to the drought, wherein the years of 2003-04 crop yield is -6.4 percent which is drought prone year as mentioned earlier. It is also same that the years of 2010-11 (-1.2) and 2012-13 (-0.8). These figures echo the farmer's distress due to climatic changes. There is also observed that the percentage change in area sown food grains is also slowly decline trend, which reveals that the farmers move from food grains to commercial crops.

Figure 5. Area under Agriculture Crops & Yield Annual % change



Source: Annual Season & Crop Reports of DE&S and APY statistics, EPWRF Time series

Most of the Karnataka farmers belong to small and marginal operational holdings. They have small land and are unable to invest much and involve technology. These trends make farmers more vulnerable and decelerate their livelihoods. There is number of chemical fertilizers which used by farmers which affect soil fertility and productivity in one side; other side fertilizers costlier, so farmers buy these by make loan in banks and/or money lenders. But the yield from the production is decelerating caused by climate change in terms of temperature, drought, and declined ground water availability. So the farmers fall in debt burden, suppose the production is well then the price for that is decline. So every step of farmers has risk due to climate, due to market.

Suggestions and Conclusion:

The agrarian crisis is due to many things, climate change is one of those and important cause. Although the formers take coping up strategies such as change cropping pattern and sowing time, migration etc. But these are not gives them short run relief. In the long run theme become vulnerable as earlier. So after the discussion about how climate change affects farmer's distress, there is need some measures to dissolve their problems. First, give temperature tolerant new seeds for farmers and promote initiatives to adapt farm ponds, which is essential to reduce crop failure during a drought. It also reduces stress on level of ground water. Second, government intervene to regulate the agriculture market to stabilize prices. Third, Take action against exploitation of ground water. Fourth, introduce inexpensive infrastructure for improving farmer's crops with less cost. These are some measures to reduce farmer's distress in short run. There is also need long run measures too. Take action to mitigate temperature by reduce using of fossil fuel, because the lot of carbon dioxide released by burning this fuel, which absorb the sunlight in the atmosphere, so the temperature will increase and due to this some areas prone to flood by extensive rain fall in the one side, on the other side drought is occurred. So, government take proper initiation to reduce using fossil fuel. Give an education to the farmers for reduce using chemical fertilizers and how to improve soil health. There is also need to take research and rural level conferences to save trees, importance of environmental resources and how to conserve these.

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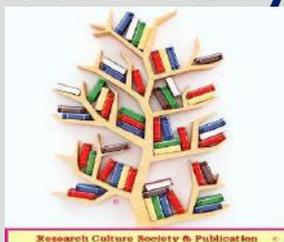
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