Holistic Research Perspectives Vol. 5

KVJ. Prof. Dr. R. Ganesan

Published by

Holistic Research Perspectives Vol. 5

₹ 600

The Greatness of Any Research Work is Only through Its Wider Applicability

- KVJ. Prof. Dr. R. Ganesan

Foreword

Today, globalization necessitates the learning and updating of advancements in every field of study. Therefore, the upbringing of mankind in accordance with understanding of global environmental challenges and sustenance through application of various scientific, technological and management practices, etc. is the need for the hour. Moreover, for a continuous learning, research process and pragmatic approach are quite important, wherein it fosters the integration of research and development for socio-economic prosperity. The book chapters included new trends in sciences, engineering, technology, management, arts and humanities. The research contributions of every author through their empirical, experimental and conceptual researches presented in book chapters of this edited book is quite meticulous and highly remarkable.

The inspiration and timely compilation of this edited book by the editor has been tremendous, wherein every chapter provides some new insights of unique research and provides different research insights. All the authors have contributed with fullest sincerity and utmost profundity with regard to their research chapters. I am viewing the edited book titled 'Holistic Research Perspectives – Vol.5' as a righteous source of information and knowledge enhancement.

I heartily appreciate the chief editor for his strenuous approach in congregating authors and organizing their book chapters authors. I am sure this edited book will be the beacon light for all for all readers, researchers, academicians and practitioners across the world.

Sd/-

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Preface

The knowledge building is an essential component of promulgating socio-economic development of any nation across the globe. The development of any nation depends upon its scientific base and technological advancements through innovative research process with time. Furthermore, the advancement of research in every field in terms of learning with pragmatic understanding are quite indispensable for attaining growth of society. Such learning is possible only by continuously congregating the knowledge effectively for wider reach of communities for upbringing prodigious development. The change in research and research over change is always inseparable. In deed it is the fundamental principle for any transformation to take place and progress towards growth. This edited book titled 'Holistic Research Perspectives' envisages in the mission of integrating research on sciences, engineering, technology, management, arts and humanities for collective growth and development.

The edited book by itself is a learning platform for various fields of research, which brings in the awareness on the happenings. Moreover, any scientific innovation is possible only through holistic contributions, which accounts for overall socio-economic development and sustenance. The, empirical research, experimental findings and conceptual reviews, whichever discussed in the book chapters provides adequate insights and exhibits new vistas in research and its trends to address future challenges.

I sincerely thank all the chapter authors of this edited book for their unstinting support and invaluable time in placing their unique research contributions.

I am sure all the readers will be truly benefited through this edited book.

Jai Hind!!!

Sd/-

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Women's Movement in India: Trajectory of Organization, Ideology and Strategy

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Abstract

Indian society started to respond to the characteristic challenges of West, which gradually commenced from the dawn of 19th century. In this context, social reform became the first popular issue among Indian intellectuals who, inspired by the liberal views of social change and in the hope of preventing social abuses and launched movements more particularly for women. It is essential to understand in detail the new women movements, which are manifestations of pluralistic paradigm of development and democracy. Moreover, an insight into the struggle for women's rights will certainly become more intense in the coming decades. There is a qualitative difference and strategic variations between the present women's struggle and earlier liberation movements against oppression. This article focuses on women's movement and its role in India with special focus on Tamil Nadu. It also reviews the nature and working of women's organizations, as a lens to the Indian women's movement.

Keywords: Women's Movement, Paradigm, Strategy.

Genesis of Women Organizations

Movements of reform against the social evils began in India in the early 19th century. They have usually been attributed to external factors, which are due to the impact of western education, missionary activities and promotion of nuclear and monogamous family and liberal ideas of the west. The British and Indian reformers in the 19th century and early part of 20th century have addressed several issues pertaining to women. Most important of them were the campaigns against sati, polygamy and child marriage and agitation in favour of widow remarriage and education for women. It is in the late 19th century, a new spirit had characterized a new social reform movement and issue of women's status had become entangled with intra elite competition in Madras and Bombay presidencies. The early reformers like Raja Ram Mohan Roy and Eshwara Chandra Vidhyasagar were

actuated mainly by the philanthropic motive and their objective was to bring certain individuals who were suffering under social laws through the awakening of natural consciousness, wherein a strong motive of national efficiency came into play. It is realized that the disabilities of individuals do not affect them alone, but their influence penetrates much farther and weakened and undermined the social fabric. At this juncture, M.G Ranade, an eminent leader of moderate faction, (influenced by the Malabari's proposal of National Association for Social Reform) wanted to form an organization of All – India, base to give a definite shape to the Social Reform movement.

In the early 1880s the social reformers of Madras, inspired by political leaders, tried to have a closer contact with likeminded people in other parts of South India (1). The new urge was activated when a political conference of that kind was held in Madras during 1884. Accordingly, a South Indian Conference was convened as Hindu Women's Remarriage Association on 31st December 1884. However, the participation was restricted to graduates presumably with a view to enlist the support of the educated young men in the cause of social reform(2). The Indian National Congress inspired the reformers like Ragunathan Rao and M.G Ranade who wished to discuss the social issues at the congress. It is significant to note that when the leaders of Indian National Congress decided to eliminate the social issues from their agenda in 1886 at Calcutta session, M.G Ranade and Ragunatha Rao formed the National Social Conference (NSC) in 1887 in Madras to provide an All – India forum for discussion of social reforms (3). The National social conferences induced the spirit of nationalizing the social problems and paved the way for the birth of many social reform organizations all over India, though of regional nature, particularly in Tamil Nadu.

During this period, the Bharath Dharma Maha Mandali was founded in 1890 in Punjab by Pandit Deen Dayal Sharma to counter the teachings of Arya Samaj. In 1895, the Sanadhan Dharma Sabha was founded in Haridwar, the Dharma Maha Parishad in South India and Dharma Mahamandali in Bengal to defend orthodox Hinduism. In 1902 these various bodies were united under a single organization called Bharath Dharma Mahamandali, with its headquarters at Varanasi (4). This organization highly affected the status of women since it insisted on the orthodox customs of Hindus, which was unfavourable to the emerging pattern of liberalized atmosphere for women. During the same period, two reform associations functioned in Madras. In 1892, the Madras Hindu Social Reform Association was founded by Viresalingam Pantulu, whose efforts were mainly concerned with the plight of widows. This Association fought for the liberation of women from traditional Hindu customs which degraded women (5). Simultaneously R. Venkat Ratnam Naidu started Social Purity Movement advocating temperance and combating the Devadasi customs. A similar organization, the Madras Hindu Association was founded by Mrs. Annie Besant in 1904, to promote Hindu social and religious

customs on national lines with the spirit of Hindu civilization. The Seva Sadan was another social reform and humanitarian organization founded in 1885 by the famous Parsi social reformer Behramji M. Malabari, relentlessly fought throughout his life against child marriage and 'enforced widowhood' (6). This organization had branches all over India specialised in the care of socially discarded and exploited women of all castes, providing education, welfare and medical services. Hence, a variety of social reform movements throughout India and Tamil Nadu in particular, devoted to the cause of elevation of position of women and infused new ideas in the minds of people with great enthusiasm, which subsequently resulted in the emergence of new women's groups in Tamil Nadu. In the beginning of 20th century, the progress of western education and growth of national consciousness and social awakening developed a new climate in favour of women in Madras Presidency. The new womanhood, which emerged during this period reflected in women's participation in the National Movement, who also played an important role in the great social and political transformation.

In Tamil Nadu, the scope and structure of women's movement is as diverse as their activities, but they strive to achieve a common goal on the upliftment and development of women, despite their efforts through education, research and training programmes or through counseling, awareness generation activities and a wide range of their services and programmes. In terms of coverage, their activities range from the grass – root level to national level. They also differ as activist groups, policy making bodies, research organizations and professionals Associations. Their target groups may vary from rural to urban women, housewives to working women, illiterates to urban educated middle class women and from self-employed poor women to highly placed women entrepreneurs.

Although, different categorization of these women's organizations are possible based on their size, coverage, activities and methodology, they have been broadly grouped as follows:

- Social Reform oriented organizations
- Social work-oriented organizations
- Government / Political party-oriented organizations
- Professional women's organizations
- Groups involved in research and documentation of women's issues
- Non-Governmental organizations

Social Reform Oriented Organizations

The organizations, which are highly social reform orientation aimed at reforming the society by involving themselves in social activities for the rehabilitation of women besides, creating awareness on their fundamental rights and responsibilities.

Few such organizations in Tamil Nadu were Women Indian Association (WIA), All India's Women Conference (AIWC), Joint Action Council for Women (JACW), Kaingkarya, Forum for Women's Rights and Development (FORWORD), Centre for Women's Development and Research organization, Women's Collective, etc. The credit of establishing the first women organization of all India character goes to Irish Lady Dorothy Jeenarajadasa and Margaret cousins along with Annie Besant, who laid the foundation for Women's Indian Association on 8th May 1917 at Madras (7). This was the first organization in India to make a demand for women's franchise and succeeded in its mission. The official journal of this association "Shri Dharma" carried authentic news of the progress of Indian women's movement in India and around the world. It is important to note that, since its foundation in 1917, Women Indian Association (WIA) played a significant role in the emancipation of women. The WIA adopted a strategy of organizing campaigns to raise their voice against inequality, patriarchal supremacy and non-egalitarian social structure. Furthermore, it organized camps like orientation, training, legal awareness and environmental awareness in order to orient women in all fields pertaining to literacy programmes, wherein the organizations succeeded by conducting total literacy campaign, tuition centres, adult education-Jana Siksha Nilayam and Non-Formal education programmes. It expressed satisfaction on the passing of Child Marriage Restraint Act and Sarada Act against child marriage. Besides, these it emphasized the introduction of compulsory primary education for girls and was responsible for the abolition of devadasi system and suppression of immoral traffic in women (8).

The WIA became the parent of All India Women's Conference (AIWC), which was organized in 1927. It was founded as an educational conference, but from its first session, it focused on both social and educational aspects. In the post independence period, the UNO gave the All India Women Conference (AIWC) a consultative status to ascertain the Indian opinion on worldwide women's issues. Its main objective was to work for society based on the principles of social justice, integrity, equal rights and opportunities for all. It played an active role in initiating and campaigning for the social legislation such as Sarada Act (1929), Special Marriage Act (1954), Hindu Marriage and Divorce Act (1955), Hindu Minorities and Guardianship Act (1956), Suppression of Immoral Traffic among Women and Girls Act (1956), Dowry Prohibition Act (1961), etc. (9). With the passage of time, AIWC has diversified its activities and programmes, which included projects for eradication of illiteracy, family planning, child welfare, vocational training for women, free legal-aid to women in distress and other socio-economic measures. It aims at the upliftment of under privileged sections of society.

The Joint Action Council for Women (JACW) came into existence to support, uphold and protect the interests, status and dignity of women. A politically non-aligned, non-sectarian feminist association, it was formed as a spontaneous response to a call for combined action by women activists and groups. Also, to

establish and act as a forum, wherein different women's organizations could send their representatives, to coordinate activities concerning women, the idea of a common platform for women's organizations. This was conceived at a workshop held in March 1982, arranged by the United States Information Centre in Madras along with the Madras Branch of the International Zonta Club for Women under the chairmanship of well-known activist and writer Veena Mazuumdar of Delhi and was named as Joint Action Council for Women. Initially, around 30 Women Organizations from Tamil Nadu has participated in the workshop. It was formally registered on July 14, 1983, functioning until then as an ad-hoc committee. It is working towards securing just rights and equal opportunities for women, a centre for counselling women in distress and in need of assistance and striving for the economic and social development of women through various projects (10). During 1983-1990 JACW established six Sahodari centres of which two were in Chennai at YWCA and Andhra Mahila Sabha and one each at Tirunelveli, Salem, Ooty and Kumbakonam respectively. The Aashraya Integrated Shelter project was established in 1985 as a short stay home or crisis centre for women, at the premises of a welfare organization, Andhra Mahila Sabha (11).

The Kaingkarya (meaning *noble deed* in Sanskrit) was the brainchild of Kaveri Natarajan, a service-minded teacher and came into limelight in 1991 with a view to serve the two most vulnerable sections of society-women and children. Kaingkarya primarily works with the needy at Thirusoolam, Chennai. The organization's maiden initiative 'Project Vazhikatti: empowerment through education' was launched in 1992 (12). It conducted an AIDS awareness programme, with domestic help for marginalized sections as the primary target. The Forum for Women's Rights and Development, (FORWORD) came into existence in 1992 to help battered and deprived women who live emotionally, socially, educationally and most importantly, economically insecure lives. The fundamental motto of it is to reach the oppressed women primarily through awareness and education programmes (13). Apart from counseling programmes and advocacy, regular seminars and workshops on domestic violence are conducted.

The Centre for Women's Development and Research organization was started in 1993 as a platform to help and redress the problems of poor women. The organization's initiatives through 'Manushi' and 'Snehidhi' revolve around female domestic workers and adolescent girls living in slums (14). The programmes offer counseling, leadership training and awareness of gender issues, education and training in life skills. The women's collective is the outcome of collective efforts of six organizations in Tamil Nadu headed by women. The Women's Collective is facilitated by Ms.Sheela through Tamil Nadu Resource Team and was started way back in 1994. Women's Collective organizes people at village level into small self-help groups with an average membership of 12 and functions as SHGs helping the members to deal with their personal, family and community issues (15).

These aforementioned organizations are highly oriented towards social reformation of the society by involving themselves in social activities for rehabilitation of women, besides creating awareness of their fundamental rights and responsibilities. In this category, these organizations have contributed for improving socio-economic conditions of women on one hand and on the other into the overall task of bringing rural development. This is evident from the fact that the activities were invariably oriented towards social welfare programmes.

Overview of Social Work Oriented Organizations

The second category propagates for betterment of women working over wider areas where women are accessed to involve actively in the programme of action. The social work-oriented organizations aim at catalyzing the women towards development approach to build new models focusing with new programmes and represent needs and aspirations of women. There are nearly 120 social work women organizations in Tamil Nadu among which special mention have to be made about Andhra Mahila Sabha (AMS), Young Women's Christian Association (YWCA), Family Planning Association of India (FPA), Women's Voluntary Service of Tamil Nadu (WVS), Pennurimai Iyakkam (PI), Centre for Development and Women's Studies (CEDAW), Feminist Association for Social Action (FASA), International Foundation for Crime Prevention and Victim Care (PCVC), etc.

Andhra Mahila Sabha (AMS)

Andhra Mahila Sabha (AMS) is an institution dedicated towards working for the empowerment of women. In 1938 Durgabai Deshmukh started the Andhra Mahila Sabha. The vision of this organization is "Empowering Women" and the motto is to promote the education of women, to propagate traditional values, to uphold the dignity of women, to empower them and to train women to be efficient workers and also to harness their services in building up the future of the nation in general and women in particular (16).

Young Women's Christian Association (YWCA)

Young Women's Christian Association (YWCA) movement founded in England owes its origin to two different groups. The first group in Madras was founded in 1884, eight years before it was actually called the Young Women Christian Association. This group called the Madras Christian Women's Association was organized shortly after a missionary conference in Calcutta (now Kolkata) in1890 (17). The present YWCA was established in 1892 by the effort of Emily Kinnaird at Madras (now Chennai) in which Sahodari project has been instituted, wherein distressed women were given counseling or legal aid. The YWCA played a remarkable role through the activities of Sahodari and its main aim was to give

women food and shelter and to offer them vocational training (18). They dedicated Navajeevan project to the care of mentally ill women, providing them occupational rehabilitative therapy. Other projects like community college, Old age home, Nursery and balwadi, rural development project aims to develop and empower women. The YWCA with its motto "By love serve one another" endeavours to promote the full development of women irrespective of their religion or creed (19).

Family Planning Association of India (FPA)

Family Planning Association of India (FPA) was established in 1949, which broadly work towards creating awareness among people on sexual and reproductive health, family planning and HIV/AIDS. It endeavours to promote sexual and reproductive health, especially among the marginalized sections of society (20).

Women's Voluntary Service of Tamil Nadu (WVS)

Women's Voluntary Service of Tamil Nadu (WVS) is a voluntary, non-profit, non-sectarian organization established in May 1972 at Raj Bhavan, Madras with a view to bring all women social workers under one forum and organize measures for amelioration the living conditions especially of the weaker and under privileged sections of the society (21).

Pennurimai Iyakkam (PI)

Pennurimai Iyakkam (PI) was established in 1979, which aims at organizing campaigns and meetings to mobilize poor women in providing support and shelter (22). They take up issues such as violence in marriage and dowry harassment and take on to the streets to infuse thought and bring to the fore problems that warrant immediate attention. The Pennurimai Iyakkam uses techniques like street plays, skits on burning issues, feminist song, posters, exhibitions etc. It is publishing a journal by name 'Pennurimai Kural' (Voice of Women's Right) to implement the ideologies.

Centre for Development and Women's Studies (CEDAW)

Centre for Development and Women's Studies (CEDAW) was established in Chennai in 1988 (23), which is highly identical with 'Pennurimai Iyakkam'. This is a positive women's network in raising consciousness, general issues affecting women and fighting the stigma associated with HIV/AIDS are the areas of concern for CEDAW. Also, it believed in conducting demonstrations and rallies, which are yet another medium of expressing dissent and calling for a thorough transformation.

Feminist Association for Social Action (FASA)

Feminist Association for Social Action (FASA) has started in Chennai, which led the way in dissemination of information on sexual harassment, domestic violence and broke new grounds through its relentless pursuit for laws to counter gender discrimination (24). FASA's primary objective was to counter different forms of gender discrimination and spread awareness on gender issues.

International Foundation for Crime Prevention and Victim Care (PCVC)

International Foundation for Crime Prevention and Victim Care (PCVC) was instituted in the year 2001 at Chennai with the sole aim of countering domestic violence and providing a range of services for victims. The PCVC's initiatives and services fall under broad categories – crisis intervention and prevention. They include the following: *Shanthi* – crisis intervention centre for domestic violence victims, *Astitva* – emergency shelter for women and children, *Udhayam* – community support unit working in tandem with all-women police stations, *Vidiyal* – project for burn survivors of domestic violence (25).

Thus, the social reform-oriented organizations believe in fighting against all forms of sexual oppression and believe in transcending the existing social order. These organizations are identical in views, which expressed the need to look more deeply into the issues of gender identity i.e., the subordination and oppression of women in the family with special focus on dowry murders, sexual exploitation and women's role in the decision-making process in the family, etc. In this process, they insist on self reliance in order to elevate the economic status of women through equal employment opportunities in both organized and unorganized sectors.

Government / Political Party Organizations

They are formed to identify, recruit, train, endorse and support women seeking public office. These organizations help women candidates run successful campaigns, hold workshops and developing a platform in motivating volunteers. The social welfare department of the government directs its attention to the implementation of welfare programmes for women. While on one hand the government aided voluntary organizations, conduct many programmes and execute various measures to promote the cause of women, on the other, the political party-oriented women's wings act as catalyst not only to enhance women's interest in politics but also to seek their support for membership in the party.

The Tamil Nadu Social Welfare Board which was constituted in 1954 has been working for the upliftment of people living below poverty line through voluntary institutions in the State with the assistance of Central Social Welfare Board.

Women's Welfare Department was established by Government of Tamil Nadu in 1947 (26). It provides support to Voluntary Organizations through a variety of programmes to facilitate the empowerment of women through education, training, collective mobilization, awareness creation and also through income generating activities and provision of support services. Also, with the help of funds received from Central Social Welfare Board, the Tamil Nadu Social Welfare Board assists voluntary organizations on a large scale, which serves children, women and handicapped and implements welfare schemes (27).

During the post Independence era, women are increasingly taking interest in political issues and activities. There is a greater awareness among women on the power and right of franchise given to them. Hence, the political parties of Tamil Nadu such as Dravida Munnetra Kazhagam (DMK), All India Anna Dravida Munnetra Kazhagam (AIADMK), Congress (Indira), Communist Party of India - CPI (Marxist), Marumalarchi Dravida Munnetra Kazhagam (MDMK), Paataali Makkal Katchi (PMK) and Desia Murpokku Dravida Munnetra Kazhagam (DMDMK) constituted their women's wing with a view to executing their ideology and also to enhance the women membership of their parties.

The Indian National Congress (I) party had firmly entrenched itself in the politics of the nation and of state for more than 50 years. The Mahila Congress or Women's wing of this party was constituted soon after its foundation in 1885 (28). There were a lot of women freedom fighters who took active role in the activities of the party. Next to Congress (I) party, the most dominant party in the political scene of Tamil Nadu is the DMK (an offshoot of Justice Party and Dravidar Kazhagam), which constituted its women's forum in the name of 'Magalir Mandram' on 21.8.1956 (29). The social and cultural ideologies of EV Ramasamy better known as Periyar and his self-respect movement influenced the members of the women's wing of this party.

The ideologies of Karl Marx laid the foundation for the Communist Party, which was split into two and off–shoot was called as CPI (M) in 1964. The party played a vital role in the emancipation of women resulting in the formation of All India Democratic Women's Association (AIDWA) referred to as Jananayaga Madhar Sangam, which was officiated on 09.12.1973 (30). AIDWA works to mobilize women across levels, from the remotest districts to the urban heartland, which believed in the demonstrations, which are most potent method of effecting change. The members take to the streets in large numbers protesting against discriminatory measures or laws, domestic violence, dowry harassment and other issues concerning women. AIDWA's legal aid centre first attempts to find solution to women's problems by counseling parties involved in the dispute and effect reconciliation (31).

AIADMK was formed in the year 1972 and constituted its women's wing in the same year (32). Though the party ascertains some moderate approach for the women's problem, it did not have any basic character in the mobilization of women in the field of politics. Besides the above mentioned major political parties, the other developing parties in Tamil Nadu are Pattali Makkal Katchi (PMK) founded by Dr. Ramadoss in 1989, Marumalarchi Dravidaa Munnetra Kazhagam (MDMK), which splited from DMK under the leadership of V.Gopalasamy, Desiya Murpokku Dravida Munnetra Kazhagam (DMDMK) (Formed in September 2005) by Vijayakanth also formed their women's wing to gain popularity among women and also to support the women activist groups.

Women's fronts of various political parties focused on their activities towards electoral victory. It is during the International Women's Decade, all political parties in Tamil Nadu have shown greater interest in women's problems. In order to promote and enhance the interests of women and to increase their representation in politics, they instigated their women's wing. The political parties in Tamil Nadu are by and large reluctant to place women in higher positions. Most of these women's wings were created with an ulterior motive only to gain support and popularity among women. However, the ideologies of different Women Movements and Government political party-oriented organizations revealed the fact that they, no doubt, display on the streets for highlighting women's oppression. There is a lot of unevenness in the extent of the activities, programmes, strength of leadership, societal response, level of consciousness etc., in various parts of the state because of the varied cultural differences.

Groups Involved in Research and Documentation of Women's Issues

The recently emerging women' organizations involve themselves in research and documentation of women's issues. They have attempted to resolve issues of cultural − traditional − patriarchal origin, which has given women a subordinate status in society. They are involved in diverse activities ranging from activism to research and documentation and claim to subscribe to certain ideals such as equity, conservation, gender sensitivity and other related issues. Initiatives: Women in Development (IWID) and Tamil Nadu Social Watch (TNSW) are the two important examples for this category.

IWID is an initiative formed in 1989 by a group of women activists from different regions of India who work to promote the development of women and marginalized with in NGOs in larger society. The key focus of IWID is to collect, compile, critically analyze and disseminate issue based information gathered from widest possible range of materials, including periodicals, unpublished and published articles, reports, papers, books, films, posters, and other documents produced by

different groups at the state, national and international levels on a variety of topics related to Gender and Development(33).

Tamil Nadu Social Watch (TNSW)

Tamil Nadu Social Watch (TNSW) came into existence to share a common platform with the aim of materializing aspirations of the people, more particularly women in the state. It is actively engaged in monitoring the performances of the institutions of governance in the state. TNSW through its research and advocacy creates an enabling environment for citizens and the government to identify the hindrances and remove the same so that the latter meets the expectations of the former (34).

Professional Women's Organizations

The organizations which identify promotional strategies for the protection of women through concrete efforts are referred to as professional women's organizations. They aim to eradicate poverty of women and also increase their economic position integrating them in all sectors of social and economic policy. The following are some of the organizations working with the above objective:

Working Women's Forum (WWF)

Working Women's Forum (WWF) was started in 1978 as a responsive organization, working for the rights of poor women and facilitating access to credit, education, healthcare and other fundamental services. It works with 14 branches in urban, semi-urban and rural areas across Tamil Nadu, Andhra Pradesh and Karnataka. WWF is essentially a movement of grass root women, an initiative covering poor rural and urban working-class women in three Southern States. WWF has promoted two subsidiary institutions to work towards empowering poor women: The Indian Cooperative Network for Women (ICNW) and The National Union of Working Women. WWF's pioneering initiatives is micro insurance. Social security coverage for members is provided through tie-ups with the Life Insurance Corporation of India (LIC) and Royal Sundaram Alliance Pvt. Limited (RSA). Women are covered under life, accident, disability and health through the ICNW (35).

Marketing Organization of Women Entrepreneurs (MOOWES)

Marketing Organization of Women Entrepreneurs (MOOWES) is a pioneer in assisting women entrepreneur's market products was the brainchild of Seetha Ranganathan and Janaki Ananth. It came into being in 1990 with initial assistance from Indian Bank. MOOWES in Chennai works to encourage women to set up their own manufacturing units or trade in products of their choice. MOOWES offers its

members a platform to reach consumers primarily through participations in exhibitions or by conducting exhibition-cum-sale. The women receive training in jute making, food processing, tailoring and leather technology to name a few. In addition, MOOWES' annual feature 'Shakthi', an exposition comprising seminars, workshops and exhibition, which is the largest stage for members to showcase their products as well as learn new skills (36).

FICCI Ladies Organization (FLO)

FICCI Ladies Organization (FLO) is an organization instituted under Federation of Indian Chambers of Commerce and Industry (FICCI). FLO is providing a platform for women to express their concerns and an opportunity to excel in their chosen business endeavours with its headquarters in Delhi. The Chennai Chapter, the first regional Chapter of FLO was set up in 1996 with 'power to empower' as their mission. The FLO chapters in Coimbatore, Hyderabad, Jaipur, Kolkata and Mumbai serve as nodal centres and reach out to other areas of the country. FLO is determined to create a space to promote entrepreneurship and business acumen among women professionals. This is the only national-level trade organization, which serves as a forum for women to interact and share ideas and experiences (37).

Association for Non-Traditional Employment of Women (ANEW)

Association for Non-Traditional Employment of Women (ANEW) started in 1997, provides free training for young women from underprivileged families and helps them to get access to practical job skills and self-sustaining employment. ANEW's projects can be divided into five broad categories: Housekeeping, Diploma in Computer Applications, Car driving, Autorickshaw driving, Home nursing. In addition to this, they also offer counseling and self awareness classes for personality development (38).

Centre for Entrepreneurship Development (CED)

Centre for Entrepreneurship Development (CED) has undertaken a number of skilled training and entrepreneurship development activities for the benefits of women in 2001 at Madurai. They conducted a number of workshops / seminars / conferences at regional and national level on Women Empowerment in association with other developmental agencies with the support of Government agencies. CED has imparted Skilled Training to around 300 Self Help Group women in and around Madurai District on candle making, food processing – pickle and juice making, cleaning powder manufacturing, etc. (39).

Women's Entrepreneurship Promotional Association (WEPA)

Women's Entrepreneurship Promotional Association (WEPA) was set up in 2001, which empowers women through training, imparting information on health and hygiene, vocational training, exposure through seminars and workshops, exhibitions and guidance and consultancy services. Although, WEPA is not part of the SHG movement, it provides vocational training to members of SHGs run by other non-governmental organizations. It networks with individuals and organizations to set up units for women entrepreneurs (40).

Suggestions

To achieve gender parity the women organizations should periodically inculcate the following aspects:

➢ Should motivate women to mobilize all resources from the grass root level to the national level to maximize their impact of their programmes.
➢ Mobilize public opinion and strengthen the social efforts against oppressive institutions and age-old beliefs.
➢ Work to transform existing gender discriminatory laws and procedures.
➢ Transform the power relations in the family and other social institutions.
➢ Can help bring about more equitable gender relations within the family and society.
➢ Engage women at all levels to eradicate poverty, promote peace and achieve sustainable development proponents of their rights, healthy partnership between men and women.

Conclusion

As A. R. Desai has observed, "Indian women are developing a new sensitivity and consciousness which will no longer tolerate the suffocating financial, institutional, political and cultural norms which place them in a humiliating subject status". Women's movements in Tamil Nadu during 20th century played a vital role in mobilizing the mass for women's rights. It is from the aforesaid conceptual review; one can understand that social reform-oriented organizations mobilize the mass for women's right against innumerable forms of women's oppression. They involved in social activities, organizing campaigns against inequality, patriarchical supremacy and unequal social structure. The social work-oriented organizations focus on issues like discrimination, harassment, economic inequality, etc. They organize protest rallies, street plays, awareness meetings, legal assistance, self-employment training for underprivileged women. The government/political party-oriented organizations act as catalyst not only to enhance women's interest in politics but also to work for the political empowerment of women. The groups involved in research and

documentation of women's issues attempt to resolve issues of cultural traditional-patriarchal origin, which has given women a subordinate status in society. The professional women's organizations are aiming to eradicate poverty of women and also increase their economic position by integrating them in all sectors of social and economic policy. Hence, women must develop the attributes of initiation, persistence and tenacity to deal with the local bureaucracy and mobilize other women. The government should frame comprehensive Gender Policy at the State and National level outlining the government's commitment to achieve gender equality and gender justice. The organizations need to move away from the notion of women's development as a component and congregate on women's development as a process to achieve and attain 'empowerment'. A qualitative difference and strategic variations is required between the present women's struggle and earlier liberation movements against oppression to bring in Women Empowerment at large.

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Effect of Jeevamrutham on the Growth and Development of Amaranthus Viridis

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Abstract

Organic farming is a holistic agricultural system that enhances soil quality. Amaranth viridis is a popular a nutritious leaf vegetable that contain gluten-free grain which provides plenty of fiber, proteins and micronutrients which is used in herbal medicine. An organic fertilizer called Jeevamrutham is developed by using cow dung, cow urine, jiggery and pulses flour. Application of this fertilizer Amaranthus fields enhanced the physicochemical properties of the soil such as pH, EC, N, P, K, and organic carbon content. Microbes such as Azospirillum and Actinomycetes are enhanced in experimental soil. The quantity of phytohormones like indole acetic acid, Gibberlic acid, Abscisic acid and kinetin are also increased. In total there is an increase in biomass, shoot length and root length in Amaranthus Viridis plant with Jeevamrutham. Thus, Jeevamrutham can be efficiently used organic fertilizer to improve growth and development and yield of Amaranthus Viridis.

Keywords: Organic Farming, Jeevamrutham, Soil Fertility, Amaranthus Viridis.

Introduction

Amaranthus Viridis is an annual herb with an upright, light green stem that grows to about 60–80 cm in height. Numerous branches emerge from the base, and the leaves

are ovate, 3–6 cm long, 2-4 cm wide, with long petioles of about 5 cm. The plant has terminal panicles with few branches, and small green flowers with three stamens (Tanaka & Van Ke, 2007). The plant is often harvested from the wild as a source of food and medicines for local use. It is sometimes cultivated in the Tropics for its edible leaves and is often sold in local markets. Amaranthus viridis leaves and young plants (before they come into flower) are occasionally eaten as a cooked vegetable. The plant is also a good cattle fodder and green manure. The leaves are diuretic and purgative, and are used in poultices (fresh or as dried powder) to treat inflammations, boils and abscesses, gonorrhea, orchids and hemorrhoids. In Nigeria, an infusion of the whole plant is used to purify the blood and the pounded root is applied against dysentery. Amaranthus Viridis contain amino acids like lysine, arginine, histidine, cystine, phenylalanine, leucine, isoleucine, valine, threonine, methionine, tyrosine, etc. It also contains biologically active constituents like saponins, tannins and phenols, flavonoids, alkaloids, cardiac glycoside, steroid and triterpenoids and have some chemical constituent that exhibits potent anti-inflammatory, antihepatotoxic, antiulcer antiallergic, antiviral actions. This is also used in Indian and Nepalese traditional system to reduce labour pain and act an antipyretic. The Negritos of the Philippines apply the bruised leaves directly to eczema, psoriasis, etc. and other traditional uses range from an anti-inflammatory agent of the urinary tract, venereal diseases vermifuge, diuretic, anti-rheumatic, antiulcer, analgesic, antiemetic, laxative, improvement of appetite, antiepileptic, treatment of respiratory, eye problems and asthma respectively (Reyad-ul-Ferdous et al. 2015). Also, some of the problems encountered by Amaranth growers include decreasing soil fertility and quantity of manure required for optimum crop productivity (Sanni, 2016; Adeyemi, Komolafe & Akindele, 1989). Moreover, inadequate supply of chemical fertilizer and lack of capital to buy them in other countries are some of the problems (Adeyemi, Komolafe & Akindele, 1989; Olufolaji et al. 1987). Synthetic Chemical fertilizers, which we provide to plant as plant nutrient, are harmful for the soil health. Therefore, there is, need to find an alternative for these synthetic fertilizers. The only solution for this problem is use of organic fertilizers, which is called as "Organic Farming. " Itis not a new concept of farming, it is been practiced in India since thousands of years. Agriculture is practiced by using organic technique, where the fertilizers, pesticides, etc., were obtained from plant and animal products.

Organic farming works at grass root level preserving the reproductive and regenerative capacity of the soil, good plant nutrition and produces nutritious food rich in vitality, which has resistance to diseases. Due to high prices of inorganic inputs, organic forming has become the main motivating factor for farmers in India. Thus, the farmers are being encouraged to grow organic produces. Successful organic crop production is still seeming to be a big challenge before farmers. This type of farming is often presented as a more biodiversity-friendly practice, but the generality of beneficial effects of organic farming is debated, as the effects appear often species and context dependent. Keeping these in view, the current research

has highlighted the need to quantify the relative effects of local and landscape scale management on farmland biodiversity. The investments in agriculture went on increasing whereas the yields had constantly decreased which pushed the farmers into debt trap. The excessive use of chemicals has polluted water, soil, and environment. The modern agriculture has become cost intensive and the soil has become unproductive because of indiscriminate use of chemicals. The mono cropping and mechanization of farm equipment have affected the cattle population, which again led to infertile soils. In this backdrop, to overcome crisis in Agriculture and to ensure survival of small farmer, the only solution is organic fertilizers that builds humus in the soil and improves soil fertility Therefore, there is need to investigate into locally available, cheap organic fertilizers for vegetable production.

Jeevamrutham

Jeevamrutham is a culture,which enhances microbial activity in soil and thereby improves soil fertility and makes crops healthy. It is prepared using local cow dung, cow urine, jiggery, and pulses flour. It improves local earthworm activity and if used regularly as per protocol it replaces chemical pests and fertilizers efficiently

Literature Review

Organic farming has its roots in traditional agricultural practices that evolved in countless villages and farming communities over the millennium (Veni et al. 2020). The organic farming systems are diverse and occur throughout the world. In many countries organic farming now has a clear legislative basis and certification schemes for production and processing (Stockdale et al. 2001). Furthermore, to sustain soil health and benign environment there is a need for standardization. The conjunctive use of organic sources and biofertilizers is to increase the productivity and alternately improving soil health (Bahadur et al. 2006). Organic liquid fertilizer is the product of fermentation process, constituting efficient living soil. Moreover, the microorganisms and improves plant growth, productivity through supply of easily utilizable nutrients. Such fertilizers are cost effective and eco-friendly bio-inoculants having great potential to enhance agricultural production in sustainable way. Biofertilizers are grouped into different types based on their function such as nitrogen fixing, phosphate solubilizing and other plant growth promoting biofertilizers by different mechanism. Nutrient uptake increases significantly and consistently with addition of organic manures. From the chemical point of view, the use of organic fertilizers such as cattle manure, maintains or increases soil organic matter contents and provides plants with nutrients However, very high rates may disturb the balance between nutrients and increase salt contents in the soil, which can hamper vegetable yields.

Leafy vegetables, as well as other vegetables, are considered nutrient-demanding because they require relatively large amounts in a relatively short period of time

.Thus, applications of high rates of organic and mineral fertilizers are common in the cultivation of leafy vegetables Jeevamrutham is the best alternative that we can use in place of chemical fertilizer. Jeevamrutham is completely organic and can be used in the organic farming. Jeevamrutham serves as the rich source of the microorganism that fixes nitrogen, solubilize phosphorus. Also, it is the rich source of carbon, nitrogen, phosphorus, potassium and many micronutrients (Devakumar et al. 2014; Sreenivasa et al. 2010). Jeevamrutham is the rich source of the beneficial micro-organism such as nitrogen fixing and phosphate solubilizing bacteria. Moreover, it was found that Jeevamrutham is efficiently used between 8th and 12th days of preparation. The addition of such organic liquid manure would help to improve efficient microbial consortia thereby increasing NPK content and plant growth promoting factors. The use of Jeevamrutham is the best alternative to chemical fertilizer and our bio-enhancer could be potent source to improve soil fertility, crop productivity and quality (Kulkarni & Gargelwar, 2019).

Relevance

Amaranthus Viridis has been selected as the test crop because they are the most commonly consumed leafy vegetables by 86 percent of the population in a country like India. Hence, the study has selected this particular leafy vegetable for wider understanding.

Objective

To assess the beneficial effects of Jeevamrutham in organic farming and especially towards cultivation of leafy vegetables

Materials & Methods

Preparation of Jeevamrutham (10Litres)

The preparation shall be made by taking a container and place the mixed 0.5 kg cow dung, 500ml cow urine, 100 mg jaggery and 100 mg basin powder in 2.5 litres water then stir the contents with stick to 7 litres of water so as to prepare 10 litre of liquid Jeevamrutham. Keep, this container outside under the shade/under the tree covered with a cotton cloth is covered on it. Also, stir the liquid in the container every day in the morning and evening for about 15 minutes. Jeevamrutham is made in 48 hours and can be used directly to plants. The vegetables were cultivated in a randomized block design with two replicates each with 1.5-cent plot area. They were cultivated along with control, which is of normal soil. Initially, the soil plot is divided into two sub-replicates. One plot is sprinkled with normal tap water and labeled as control. The second plot is sprinkled with Jeevamrutham and labeled as test. After one hour, the seeds of green amaranth are weighed equally for the two plots and sown at the same time. The seeds of green amaranth (Amaranthus Viridis)

were purchased from the Department of Agriculture, Nellore District, Andhra Pradesh.

Biometrical Analysis & Yield Attribute

The green amaranth biometric analysis such as Biomass, plant height (shoots & root length) was measured at 10 days interval. Furthermore, at each observation 20 plants were randomly selected and recorded.

Soil Physico-Chemical Analysis

The soil from various treatments such as control and Jeevamrutham applied soil are analyzed for physic-chemical properties such as pH, EC, N, P, K, and OC (organic carbon).

- P^H and conductivity- P^H Meter
- Organic Carbon by Rapid Titration Method (Walkley & Black, 1947)
- Nitrogen- Kjeldahl procedure (Cole & Parks,1946)
- Phosphorous- Dilute Acid-Fluoride Bray and Kurtz P-1 Method (Tandon, Motto & Kurtz, 1967)
- Potassium- Flame photometry (Murugesan & Rajakumari, 2019)
- The microbial analyses of soils (such as control, Jeevamrutham applied soil) were done by using standard viable count technique using hemocytometer or a digital colony counter.
- The media such as, yeast extract manitol agar medium with Congo red for Rhizobium, Azospirillum isolation Jensen's medium, Actinomycetes isolation agar medium were used for the enumeration of the total bacteria, Rhizobium, Azospirillum and Actinomycetes. All the experimental analyses were carried out in triplicates and the average value was used in these studies.

Analysis of Phytohormone

Quantity of phytohormone like indole acetic acid (IAA), Gibberlic acid (GA), kinetin 3 and Abscisic acid in the manure samples by modified extraction method proposed by Unyayar, Topcuoglu and Unyayar in 1996.

Results& Interpretations

The experimental results are categorically indicated in below tables and interpreted accordingly.

Table 1: Impact of Jeevamrutham on Soil Quality

S. No.	Parameter	Control	Jeevamrutham Treated	Increase or Decrease over Control (Percentage)
1.	PH	8.0±0.2	7.7±0.02	-3.75(p<0.01)
2.	EC	0.04±0.001	0.18±0.7	+350(p<0.0001)
3.	N	0.05±0.012	1.96±0.23	+3836(p<0.00001)
4.	P	17.8±0.71	20.0±1.01	+12.36(p<0.001)
5.	K	116±4.6	127±8.7	+9.48(p<0.01)
6.	Organic Carbon	7.80±0.7	24.50±2.3	+214.10(p<0.0001)
7.	Moisture Content	8.6±1.8	18.4±0.34	+113.95(p<0.0001)

(Mean, ± S.D. + or − indicate percent change over control. Values are mean of 10 observations. 'p' denotes the level of significance and N.S. No significance)

The data on the impact of Jeevamrutham on the soil quality is presented in Table 1. It has been found that there is a significant increase in EC (+350), N (+3836), P (+12.36), K (+9.48), organic carbon (+214.10) and moisture content (+113.95).

Table 2: Impact of Jeevamrutham on Microbial Analysis

S. No.	Parameter	Control	Experimental	Increase or Decrease over Control (Percentage)
1.	Total viable count	$170x10^6$	$290x10^6$	70.59
2.	Rhizobium	$71x\ 10^6$	$177x10^6$	147.89
3.	Azospirillum	$20x10^6$	$125x10^6$	525
4.	Actinomycetes	$18x10^6$	$42x10^6$	133.33

(Mean, ± S.D. + or − indicate percent change over control. Values are mean of 10 observations. 'p' denotes the level of significance and N.S. No significance)

The data on the impact of Jeevamrutham on the soil microbial content is presented in Table 2. The results revealed that there is a significant increase in total viable count (70.59), Rhizobium (147.89), Azospirillum (525) and Actinomycetes (133.33).

Table 3: Impact of Jeevamrutham on Phytohormones

S. No.	Phytohormone	Control	Experimental	Increase or Decrease over Control (Percentage)
1.	IAA	0.459±0.23	3.0±0.34	+553.59(p<0.0001)
2.	GA3	0.554±0.033	0.77±0.06	+40.43(p<0.001)
3.	ABA	0.001±0.0001	0.778±28.8	+77700(p<0.000001)
4.	Kinetin	0.001±0.00011	0.477±0.034	+47600(p<0.001)

(Mean, ± S.D. + or − indicate percent change over control. Values are mean of 10 observations. 'p' denotes the level of significance and N.S. No significance)

The data on the impact of Jeevamrutham on the soil phytohormone content is presented in Table 3. The results indicated that there is a significant increase in indole acetic acid (+553.59), Gibberlic acid (+40.43), kinetin (+47600) and Abscisic acid (+77700).

Table 4: Yield Attributes of Green Amaranth in Various Soil Samples

S. No.	Parameter	Control	Jeevamrutham Treated	Increase or Decrease over Control (Percentage)
1.	Biomass(gms)	10±1.1	18±1.8	80($p<0.001$)
2.	Shoot length(cm)	3.6±0.3	4.3±0.34	19.44($p<0.001$)
3.	Root lengh(cm)	0.65±0.1	1.1±0.25	69.23($p<0.001$)

(Mean, ± S.D. + or − indicate percent change over control. Values are mean of 10 observations. 'p' denotes the level of significance and N.S. No significance)

The data on the impact of Jeevamrutham on the yield attributes is presented in Table 4. The results showed that there is an increase in total biomass (+80), shoot length (+19.44) and root length (+69.23).

Discussion

Jeevamrutham includes two words "Jeeva" and "Amrutham" which are derived from Sanskrit and are the most used by Hindus. The word "Jeeva" means a living organism and the word "Amrutham" stands for an elixir of life which has the capability to extend the life of any living organism. It is one of the best ways for the improvement of the number of microorganisms. Organic liquid fertilizer is the product of fermentation process, constituting efficient living soil microorganisms and improves plant growth, productivity through supply of easily utilizable nutrients. Such fertilizers are cost-effective and eco-friendly bio-inoculants shaving great potential to enhance agricultural production in sustainable way. Biofertilizers are grouped into different types based on their functions such as nitrogen fixing, phosphate solubilizing and other plant growth promoting bio-fertilizers by different mechanism. The excessive use of the chemical fertilizer has disadvantage over the fertility of the soil. Jeevamrutham is the best alternative that we can use in place of chemical fertilizer. Jeevamrutham is completely organic and can be used in the organic farming. Jeevamrutham serves as the rich source of microorganism that fixes nitrogen, solubilize phosphorus, also it is the rich source of carbon, nitrogen, phosphorus, potassium and many micronutrients. Jeevamrutham is low cost improvised preparation that enriches the soil with indigenous microorganism required for mineralization from native cow dung, cow urine, horsegram and jiggery. The Jeevamrutham in acidic soil when applied increases pH and in alkaline soil decreases pH. Thus, creates favorable condition for availability of maximum nutrients to plants, pH6.5 to 7.8. This condition increases the crop yield and cuts

down the entire expenses of chemical fertilizer. The plant growth promoting Rhizo bacteria, Bacillus Pumillus and Bacillus Licheniformis produce high amount of physiologically active Gibberellins Copious amount of Jeevamrutham can be used for best results. The environment which is ideal for the microorganisms to survive is that the soil temperature which is in between 24°C to 30°C, the humidity of 88 percent and maintaining moisture in the soil. This type of climate is available only in the monsoons, wherein in one can also make this happen through mulching. Mulching will help in the creation of micro-environment which will help in the improvement of microorganisms, which will, in turn, result in the formation of humus. Fermentation of organic manure as in Jeevamrutham would help to remove lignin, tannic acid, oil which are present in plant based organic raw material and are harmful to root sand inhibit the growth. However, fermenting the organic raw material might eliminate the problem. For the fermentation of fertilizer comparatively dry materials are mixed with very wet materials to obtain the preferred moisture content at a given mass. Furthermore, the aeration is very necessary factor for quality fermentation to take place. At the early stage of fermentation, a lot of oxygen is required. The effect of oxygen shortage and excessive carbondioxide can be very serious. The optimal period of fermentation can be 40 days. According to him, greater availability of nutrients occurs with a longer period of fermentation because in short period sufficient decomposition of biofertilizer does not occur to release nutrients. Jeevamrutham is a most efficient biofertilizer in the enrichment of soil nutrients, improvement of biomass, root length, shoot length, maintenance of soil texture and soil microbial quality and Phytohormones etc., and indicated the factors that influence the growth of the plant and production of high yield (Moreira et al. 2018). The important effect of Jeevamrutham is stimulation and growth of fine hair roots. Plants sprayed with Jeevamrutham invariably produce bigger leaves and denser canopy (Bama & Somasundaram, 2017). Jeevamrutham serves as the rich source of the microorganism that fixes nitrogen, solubilize phosphorus and also it is the rich source of carbon, nitrogen, phosphorus, potassium and many micronutrients (Devakumar et al. 2014, Sreenivasa, Naik & Bhat, 2010). Jeevamrutham is low cost improvised preparation that enriches the soil with indigenous microorganism required for mineralization from native cow dung, cow urine, horse gram and jiggery (Gores & Sreenivasa, 2011). Jeevamrutham in acidic soil when applied increases pH and in alkaline soil decreases pH. Thus, it creates favorable condition for availability of maximum nutrients to plants with pH ranging from 6.5 to 7.8. This condition increases the crop yield and cuts down an entire expense of chemical fertilizer. The plant growth promoting Rhizobacteria, Bacillus Pumilus and Bacillus Licheniformis produce high amount of physiologically active Gibberellins. Moreover, the higher microbial population of the liquid formulation made them as potent source to maintain soil fertility and to enhance the nutrient availability in faster decomposition of bulky organic manures.

Suggestions

Jeevamrutham can be used as efficient organic fertilizer for rowing amaranths viridis. It can be used to increase the availability of high-quality Amaranths throughout the year. It minimizes the purchase chemical fertilizer during farming.

Conclusion

Jeevamrutham is the rich source of the beneficial micro-organism such as nitrogen fixing and phosphate solubilizing bacteria. It has been observed from the study that Jeevamrutham is an efficient organic fertilizer, which improves soil quality. The addition of such organic liquid manure would help to improve the microbial content thereby increasing NPK content and plant growth promoting factors. The use of Jeevamrutham is the best alternative to chemical fertilizer.

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Short-Term and Long-Term Effect of Acidic and Alkaline p^H on the Mortality, p^H Tolerance, Growth and Development Pattern of Shrimp (Litopenaeus Vannamei)

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Abstract

In recent years, drastic alterations in hydrogen ion concentrations of the aquatic systems leading to environmental acidity and alkalinity, posing a severe problem to aquatic life causing decline and disappearance of many inhabitants in different parts of the globe, especially sustenance of shrimp culture. Hence, Short-term (24 hours) and long-term (90 days) effect of acidic and alkaline p^H on the mortality, p^H tolerance, growth and development pattern of Litopenaeus Vannamei has been studied. The sub-lethal limit was determined after exposing Litopenaeus Vannamei for 168 hours in all p^H media. Furthermore, from the experimental results, it has been observed that sub-lethal limit was from $6.5p^H$ to $8.5p^H$. The growth of shrimp was studied from 10 days up to 90 days period at different ranges, wherein the maximum reduction has been found in the first ten days only. However, at the end of the experiment there has been 12.41 percent decrease in the body weight at $8.5p^H$ and in total 16.58 percent productivity get decreased.

Keywords: Acidic, Alkaline, p^H, Short term, Long term, Sub-lethal.

Introduction

A dynamic equilibrium exists in aquatic ecosystems between biotic and abiotic factors. The chemical and physical demands of life in water impose vigorous constrains on aquatic species. In aquatic habitats, variations occur usually in abiotic factors such as temperature, salinity, photoperiod, pH, turbidity and gaseous contents daily and seasonally. Each of these factors, single or together if altered can impose a considerable load of stress on the physiology of aquatic living beings. Stress is a best descriptive term for environmental pressures, which require physiological compensation in living material. The pesticides, organic pollutants, organic and inorganic acids from different sources frequently enter the aquatic systems and create a type of stress condition to the organisms.Shrimps perform all their bodily functions in water. This is because they are very dependent upon water to breathe, feed and grow, to excrete wastes, to maintain a salt balance, and to reproduce. Understanding the physical and chemical qualities of water is critical to successful aquaculture. Largely, water determines the success or failure of aquaculture operation. Very high (> 9.5) or very low (< 4.5) p^H values of media are unsuitable for most aquatic organisms. Young and immature stages of aquatic insects are extremely sensitive to p^H values. Moreover, high p^H levels (9.0 to 14.0) may cause harm to shrimps by denaturing cellular membranes. Changes in p^H can also affect aquatic life indirectly by altering other aspects of water chemistry. To the contrary, low p^H levels accelerate the release of metals from rocks or sediments in the stream. These metals can affect animal's metabolism and their ability to take water in. At high p^H (>9) the ammonium in water is converted to toxic ammonia, which can kill organisms. Moreover, cyanobacterial toxins can also significantly influence the animal populations. Thus, p^H is important in aquaculture as a measure of the acidity of the water or soil. In addition, it is to be noted that aquatic organisms may not survive in waters below p^H 4.0 and above p^H 10.0 for long periods. The other major reason for the death of shrimp at altered p^H media was due to damage to the gill structure and due to broken gill lamellae. Another possible reason for mortality due to extreme acidic p^H may be due to loss of bicarbonate ions causing acidic and death of shrimp. Similar studies have reported causing the loss of sodium, calcium, chlorides and carbonate ions under altered p^H conditions (Beamish et al. 1975). In total, one can conclude that the mortality of shrimp was due to toxic effect hypoxia or ionic imbalance or both. The survival of shrimp varied at different p^H ranges. The stress for the animal is more at extreme p^H range. Moreover, it is also true for any toxin. In this experiment, the survival time of animal depends upon the intensity of lethality as found in the evidence through extreme p^H variations. It is because of its commercial and nutritive value several studies have been conducted on prawn (Itami, Takahashi & Nakamura, 1989; Lavilla-Pitogo et al. 1990; Itami et al. 1991; Vera et al. 1992; Lee et al. 1997) in various countries such as Australia (Pizzutto & Hirst, 1995), India (Karunasagar, Pai & Malathi, 1994), Indonesia, Thailand (Jiravanichpaisal, Miyazaki & Limsuwan, 1994), the Philippines (Baticados et al. 1990) and Taiwan. However, much work

needs to be undertaken in order to assess the effects of altered pH medium on the mortality, growth and production of Litopenaeus Vannamei.

Literature Review

Altered pH medium also exerts equal stress condition on the aquatic living beings like temperature, salinity, oxygen and other physical conditions (McDonald et al. 1980). The important food organisms of aquatic animals are also affected by the acidification of lakes. Many studies have dealt with the relationships between mortality and the various environmental conditions in prawns, such as anatomical works on the general description of white shrimp (Young, 1959), the branchial organ of the tolerance and respiration of prawn on exposure to air (Egusa, 1961; Defur et al. 1988; Whiteley & Taylor, 1990; Whiteley, Al-Wassia & Taylor, 1990; Nakamura, 1994; Samet, Nakamura & Nagayama, 1996), relative humidity effect on kuruma prawn (Samet & Nakamura, 1997), histology with fine structure of the gills of various penaeid species (Talbot, Clark & Lawrence.1972; Couch, 1977).

The range of concentrations or intensities of environmental factors are variable within which an animal is able to survive for its approximate average survival time has been defined as the zone of tolerance (Fry, 1971).The resistance of various fresh water animals to strong alkalies in distilled and natural waters has been studied by many investigators (Eicher, 1946; Bhaskar et al. 1984). Other studies on the survival and mortality of fishes in response to pH stress include (Hill & Hampton, 1969; Beamish & Harvey, 1972; Dunson & Martin, 1973; Daye & Garside, 1975; Robinson et al. 1976; Speir, 1987; Hall Jr. et al. 1993). It is through the considerable data available on this aspect it can be generalized that the approximate lethal limits of pH ranges between 3.7 to 5.4 in acidic waters and between pH 9.5 to 11.1 in alkaline waters for different aquatic animals.

Other studies have determined the pH tolerance capacities of various developmental stages in different fish (Speir, 1987; Hall Jr. et al.1993) species such as larvae, young fry, embryos, and eggs (Mount, 1973; Daye & Garside, 1976; Daye & Garside, 1980) and tolerance to other stress conditions were reported in prawn (Defur et al. 1988; Whitely & Taylor, 1990; Samet, Nakamura & Nagayama, 1996; Samet & Nakamura, 1997). Although a number of studies exist on the mortality and survival of fishes due to the relative toxicities of various acids, much less work has been done to determine the physiological changes associated with pH stress of aquatic animals, especially prawns exposed to low environmental pH. At low pH, suffocation and excessive mucous secretions have also been reported by several workers (Daye & Garside, 1976). Decreased respiration was also reported in prawn under other stress conditions (Taylor & Whiteley, 1989; Whiteley & Taylor, 1990; Nakamura, 1994; Samet, Nakamura & Nagayama, 1996). The decreased ability of aquatic animals to extract oxygen from low pH waters is attributed to the decreased blood pH in acidic waters (Neville, 1979). The influence of pH on the exchange of

sodium in fresh water animals is well-documented (Leivestad & Muniz, 1976).

Reduced growth of animals on exposure to acidic media was reported a number of workers (Menendez, 1976). Mount in 1973 demonstrated that both egg production and hatchability were reduced in Zebra fish. Acidic surface waters in combination with selected trace metals become toxic to various biological groups, particularly fish. Results from various studies have demonstrated that several anadromous and semi- anadromous (migratory) fishes to Chesapeake Bay may be adversely affected by surface water acidification (Buckler et al. 1987; Hall, 1987; Hendrey, 1987; Janicki & Greening, 1988).

Relevance

Litopenaeus Vannamei has been selected as the test animal because it is having high commercial and nutritive value along with tolerance capacity towards stress conditions. Hence, the study has selected to understand the short- term and long-term effect of altered pH on mortality, growth, and production of Litopenaeus Vannamei.

Objective

To assess the short-term and long-term effect of altered pH on mortality, growth and production of Litopenaeus Vannamei.

Materials & Methods

The shrimp Litopenaeus Vannamei has been selected for the present study in view of its high tolerance capacity towards different stress conditions, commercial and nutritive value. The shrimp has been exposed to different p^H levels in both acidic and alkaline media and determined the mortality and survival p^H ranges. In acidic medium p^H3.5 to 7.0 was observed, whereas in alkaline medium 7.0 to 10.5 p^H was recorded. The mean survival time of shrimp was drastically reduced at extreme p^H ranges and no mortality was observed at sub-lethal ranges which envisage the lethal p^H is more toxic. A dropping method has been designed for the maintenance of constant p^H in the medium, I N HCL has been used for the acidic medium and I N NaOH used for alkaline medium (Bhaskar et al. 1982) respectively. All animals were maintained at the rate of 50 animals for cubic meter water.

Results & Interpretations

In control shrimp, there was no mortality and mean survival time was found to be 166 hours (Table 1). In the acidic range at $6.5p^H$ also no mortality was observed. The mean mortality time was also same (166 hours). Interestingly, 50 percent mortality was noticed at $5.5p^H$ with mean survival time of 13 hours, but at $4.5p^H$ the

mortality was 75 percent with a mean survival time of seven hours. At 3.5p^H all shrimps died within 1.69 hours. The sub-lethal limit was determined after exposing Litopenaeus Vannamei for 168 hours i.e., 7 days in all p^H media. It has been observed from aforementioned experimental results that sub-lethal concentrations of shrimp Litopenaeus Vannamei were found to be from 6.5p^H to 8.5p^H. In case of alkaline media, 100 percent mortality was noticed at 10.5p^{H}but at 9.5 p^H 50 percent mortality was found. No mortality was recorded at 8.5p^H even after 6.9 days in alkaline media. The mean survival time has been 1.75 hours at 10.5p^H, but at 9.5p^H the mean survival is only 76 hours.

LC50 values

The 100 percent survival has been recorded only between the 6.5 to 8.5 p^H after13hrs. In addition, LC 50 values are noticed in acidic media at 5.5p^H, but in alkaline media, at 9.5p^H. THE ANOVA results showed that there was a significant difference in the results between columns but not rows. Data on the effect of altered p^H media on the weight of Litopenaeus Vannamei during chronic exposure at different p^H values has been presented Table 1.2. It is during shrimp rearing, the growth of Litopenaeus Vannamei as indicated by the body weight in grams has been recorded. The data were collected at a frequency of 10 days up to 90 days period at different ranges. The results showed that at p^H levels 3.5, 4.5, 6.5, 9.5 and 10.5 all animals died, wherein the shrimp did not survive for even for 10 days. However, at 7.5 and 8.5p^H, all animals survived until the completion of the life cycle that is 90 days. In addition to this, under normal conditions (control) body weight was found to be 14.5 grams after completion of rearing for 90 days (Table-2). The data showed that body weight at 8.5p^H has been lesser than that of the body weight at 7.5p^H (control). It is after 10 days of rearing, there was 27.8 percent reduction in the body weight at 8.5p^H. The maximum reduction was found in the first ten days only. However, at the end of the experiment there has been 12.41 percent decrease in the body weight at 8.5p^H. The data regarding the economic characters such as productivity of shrimp at different p^H levels are indicated in Table 3. The shrimp count was 68.96 at 7.5p^H, but it increased to 78.74 at 8.5p^H. The survival of the shrimp was 86 percent at 7.5p^H. However, survival was only 80 percent at 8.5p^H. The total feed consumed for 1000 shrimps was 0.948 kg, but for the same number at 8.5p^H, consumed (1.23 kg.). This clearly shows that at higher p^H we have to give more food (1.285 kg). The productivity also decreased at 8.5 p^H (1.016 kg.), when compared to productivity of 1.218 kg at 7.5p^H. In total 16.58 percent, productivity was decreased. The total food conversation ratio was 1.28 at 7.5p^H. However, the same was found to be 0.823 at 8.5p^H. There are -35.95 percent reductions in the food conversation ratio at 8.5p^H. All the economic characters of the crop that were studied statistically decreased (significant at p<0.005).

Table 1: Percentage Mortality and Mean Survival Period of Shrimp Litopenaeus Vannamei in both Acidic and Alkaline p^H Media

S. No.	p^H Media	p^H Value	Percent Mortality	Mean Survival Time (Hours)	Mean Survival Time (Days)
1	Control	7.5	0	166	6.910
2		6.5	0	166	6.910
3		5.5	50	13	0.542
4	Acidic	4.5	75	7	0.297
5		3.5	0	1.67	0.069
6		8.5	0	166	6.190
7	Alkaline	9.5	50	76	3.166
8		6.5	100	1.75	0.070

Table 1.1.: ANOVA

Source of Variation	SS	Df	MS	F Value	P Value	F Crit.
Rows	4803.889	7	686.2699	0.218146	0.974822	2.764199
Columns	28297.41	2	14148.7	4.497475	0.031008	3.738892
Error	44042.91	14	3145.922			
Total	77144.21	23				

Hypothesis

H_0: There is no significant difference between the data of rows and columns.
Result: Null hypothesis H_0 is rejected

Table 2: Effect of Altered p^H Media on Growth of Litopenaeus Vannamei during a Prolonged Period of Exposure

S. No	P^H Media	P^H	Number of Days of Exposure								
			10	20	30	40	50	60	70	80	90
			Weight In Grams								
1	Control	7.5	2.88	5.34	6.7	7.3	8.45	10.3	11.7	12.5	14.5
2	Acidic	6.5	AD	AD	AD	AD	AD	AD	AD	AD	AD
3	Acidic	5.5	AD	AD	AD	AD	AD	AD	AD	AD	AD
4	Acidic	4.5	AD	AD	AD	AD	AD	AD	AD	AD	AD
5	Acidic	3.5	AD	AD	AD	AD	AD	AD	AD	AD	AD
6	Alkaline	8.5	2.1	4.2	6.23	6.9	7.9	9.43	10.3	10.4	12.7
7	Alkaline	9.5	AD	AD	AD	AD	AD	AD	AD	AD	AD
8	Alkaline	10.5	AD	AD	AD	AD	AD	AD	AD	AD	AD
Percentage Change Over Control at 8.5p^H			-27.0	-21.3	-7.01	-6.5	-6.51	-8.45	-1.97	-6.80	-12.4

AD - All Died

Table 3: Change in the Productivity of Shrimp Litopenaeus Vannamei during Chronic Exposure of Altered p^H Media

S. No.	Parameter	p^H 7.5 (Control)	p^H 8.5 (Experimental)	Percentage Change Over Control
1	Initial Stocking (Numbers)	1000± 43	1000± 23	NS
2	Density/m^2	50	50	NS
3	PL Stocking (Days)	PL15	PL15	NS
4	Harvest Size (gm)	14.5 ±0.7	12.7±1.2	-12.41 (P< 0.001)
5	Count (Numbers / Kg)	68.96 ±3.5	78.74 ±4.2	14.18 (P< 0.001)
6	Survival (%)	86 ±5.4	80±4.3	6.98 (P< 0.001)
7	Total Feed (Kg)	0.948 ±0.003	1.234 ±0.02	30.17 (P< 0.001)
8	Production (Kg)	1.218 ±0.021	1.016 ±0.012	-16.58 (P< 0.001)
9	Food Conversion Ratio	1.285 ±0.112	0.823 ±0.0065	-35.95 (P< 0.001)

± - Standard Deviation; P-Level of Significance; NS-Not significant

Discussion

The p^H plays a vital role in the growth and development of shrimp. In the present study, an attempt was made to know the impact of the change in the p^H media on the growth and development of Litopenaeus Vannamei. It has been observed from the results and understood that no mortality was recorded in p^H range of 5.5 to 9.5 during the entire rearing period. The LC50 value was found to be 5.5p^H on acidic medium and 9.5p^H on basic medium. Moreover, 75 percent mortality was found at 4.5p^H. Impact of altered p^H media on aquatic animals was carried out by several investigators (Lloyd & Jordon, 1964; Murthy, Reddanna & Govindappa, 1981).

All the studies confirmed the impact of altered p^H on the metabolism and the growth and development. The severe morphological changes have been observed in the shrimp in altered p^H media, wherein they changed their colour. A large amount of mucus has been accumulated on the body and gills, wherein, their body got irritated due to extreme p^H media. Occasionally, the movements of the animal were irregular due to irritation of the eye. Bhaskar in 1982 carried out a research study on the effect of altered p^H media on different aquatic animals and their metabolism, wherein they found that the main reason for mortality of shrimp in extreme p^H ranges was due to the accumulation of mucus in the gill and decreased oxygen supply to the animal. This hypoxia brings changes in the p^H at hemolymph. It is

fairly evident that oxygen carrying capacity decreases due to changes in the altered p^H of hemolymph, which is known as Bohr Effect, wherein researchers have exhaustively studied this phenomenon. This decreased haemolymph p^H has been due to the entry of H^+ ions into gill from outside of the environment, particularly at gill surface. Moreover, the increased mucus secretion over the gill decreases the air diffusion across the gill membrane has been observed by various research studies. The present study recorded that survival time of Litopenaeus Vannameis has been very less (almost an hour) at extreme p^H such as 3.5 and 10.5. This result has been supported by a study conducted by Packer and Dunson in 1972. The tolerance of p^H is not exactly same in the acidic or basic environment, wherein the tolerance of shrimp was little more on alkaline side than on acidic side. Furthermore, it shows that stress is more on the acidic side than at alkaline p^H. Total shrimp survived at 7.5 and $8.5p^H$. Therefore, the researchers continued to study the effect of p^H stress in these animals during their entire life period. At the two p^H ranges, the animals survived only for 90 days as per the experimental study at different p^H ranges.

The data also showed that the animals survived better at $7.5p^H$ when compared to $8.5p^H$, wherein the food consumption was more at $8.5p^H$.However, the animal growth was lesser and productivity has been low at $8.6p^H$. The important economic parameter of food conversion ratio has been more than $7.5p^H$ when compared to $8.5p^H$. The increased intake of food and decreased productivity may be due to increased basal metabolic rate. During stress conditions, the metabolic rate will be increased to compensate the stress, wherein energy consumption may be high. This may be the reason for low productivity $8.5p^H$. Apart from these p^H interferences with microbial environment of the surrounding media changes the nutrition of animals. The gut microbial flora might have changed. Moreover, at increased alkaline p^H the oxygen consumption was more, which might have burned the excess calories in the body.

Suggestions

The p^H can be maintained properly through appropriate control mechanisms for consistent growth and production of Litopenaeus Vannamei, which ultimately lead to high economy.

Conclusions

The optimal p^H is highly essential for shrimp growth and productivity. Short term and long-term pH modifications influence the economy of shrimp crop. However, during severe acidic and alkaline conditions metabolic rate will be increased to compensate the stress, wherein the energy consumption may be high. This might be the reason for low productivity. Hence, perfect water quality management system is essential for Litopenaeus Vannamei culture.

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An Exploratory View on Congregating God and Science through Variegating Perspectives

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Abstract

Science is often associated with atheistic ideologies. The field of science is thought to be as one of the disciplines, wherein only rational and logical theories are often applicable. Moreover, anything that cannot be explained in terms of logical scientific theories or formula is termed as supernatural or irrational. This has also created a stereotypic notion among people that whoever is a patron of scientific ideas ought to be an atheist. Some scientists have been a fuel to this stereotype by openly embracing atheism. Furthermore, rationalism has gotten us far in the field of science. However, the ground reality is that the answers to seemingly impossible-to-solve questions cannot be discovered with logic alone. Hence, we refuse to believe in something, which is not scientific. Also, we may consider things, which we think as 'beyond science' to make further developments within it. The reason being, it enables the mind to embrace creativity and look at various possibilities from different perspectives. This perspective of scientific thinking might even help us to resolve paradoxes and provide answers to questions like 'Does God Exist?' Keeping these aforementioned notions, this conceptual paper overlooks on scientific theories with an exploratory view from a variegating perspective by substantiating the 'String Theory' concepts to understand the possibility of existence of higher dimensions (up to 10th dimension) and facilitates to explain the existence of God.

Keywords: Higher Dimensions, Supernatural, Universe, God, String Theory.

Introduction

As per various religions and beliefs, "God" is an omnipresent, omnipotent and omniscient being, capable of creation and destruction of the Universe and everything in it. God is feared and worshipped because of his "supernatural abilities". There are many myths and stories which speak of God doing "miracles" and helping humans accomplish seemingly impossible tasks. In other ancient societies the stories of extra-terrestrial beings establishing contact with humans is depicted. Surely, humans are not capable of such supernatural activities. If the

claims are true, it has to be someone (or something) who has powers beyond the limits of our Universe. All of this points to one thing – higher dimensions. The dimensions higher than one we live in have proposed in many physical and mathematical theories by several scientists across the world, ever since Einstein in his theories of General and Special Relativity proposed that gravity is actually a curvature in the space-time continuum (Einstein, 1921). It has been since then; scientists have built upon his theories, by attempting to propose a "Theory of Everything" which shall put together every single theory that explains a part of the functioning of this universe, to make a theory that explains our universe and the laws that guide it in one single theory. This has led to the proposition of "Multiverses" and "Higher Spatial Dimensions" as an attempt to support the proposed theories. "String Theory" is a collection of theories which attempt to explain the functioning of the universe from the quantum level, by explaining the functioning of the most fundamental of all particles - the string. However, this theory requires 9 spatial dimensions and 1 temporal dimension (time) to hold true. Each higher dimension includes more and more entities of this Universe and even parallel Universes. This paper explores the possibility of a being existent in higher dimensions, and the control it has over its environment. Perhaps, such a being could be "in-charge" of our universe, responsible for creation and management of new worlds and also destruction of planets and celestial bodies. Perhaps we've just been calling such a being as "God", and God is nothing supernatural, but rather just science, and can be explained with a theory similar to any other theory of physics.

God in Religion

Hinduism has over 33 million gods, each "responsible" for a particular aspect of the Universe and a particular aspect of our lives too. The principal Hindu deities are Brahma – The Creator, Vishnu – Protector and Shiva – Destroyer respectively. Likewise, the Goddess Saraswati for Knowledge & Wisdom, Lakshmi – Fortune & Wealth and so forth. Christianity, on the other hand, is monotheistic, describing one God who is almighty, all-powerful and all-knowing, propagated by Jesus Christ. Islam is also a monotheistic religion, formed out of the teachings of the Prophet Muhammed. Similarly, Buddhism, Jainism, Zoroastrianism and most other religions are formed by the teachings of certain "enlightened" saints, such as the Buddha, Mahavira or Zoroaster. Other religions consider the worship of nature and natural elements, such as fire. While religion has become more of a tool for building political strategies, the values taught by any religion are more or less the same. Even in religion, everything points to an "Almighty" who is capable of controlling anything in this world and our Universe. It is understandable as to why the people of ancient times came up with the idea of God. The idea of God popped into existence all by itself seem strange is due to their surroundings. It also goes with an irony that someone had to have created it. Hence, they credited the creation of their surroundings, nature and the entire Universe to an omnipotent being – The Creator or God.

With the growth of modern science, which is strongly based on logical and rational thinking, modern scientists denied the existence of a God. In the name of "supernatural", they declared the "Special Creation Theory" obsolete, because it seemed too unnatural. Moreover, with the growth of modern science, came the growth of an atheistic population. However, there is a possibility that if a God exists, he or she could well be within the laws of science and not a supernatural being.
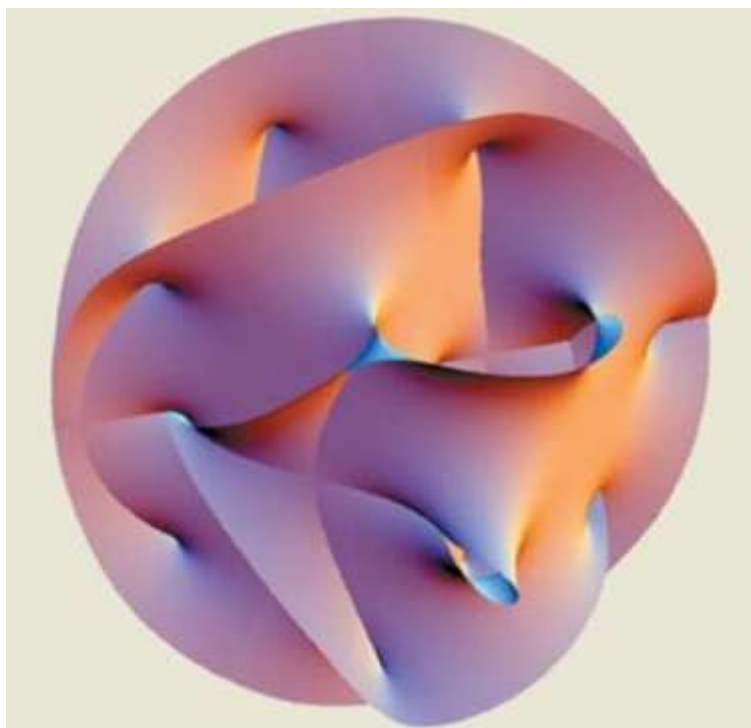
Higher Spatial Dimensions

Fig.1 – The Calabi-Yau Manifold
Source: Secondary

Modern scientists, in their quest for finding the truths of Universe, proposed several theories explaining the functioning of everything, from quantum particles to quasars. The higher spatial dimensions were proposed as an attempt to support theories such as the String Theory, Superstring Theory and M-Theory. Interestingly, the String Theory requires at least 10 dimensions to support its existence. In fact, scientists believe that there are more than 10 dimensions, but they are unstable and have collapsed and are too small. That doesn't mean they don't exist. There are several modern theories require higher dimensions to exist, so scientists believe that they have to exist and are constantly on the lookout for proof for their existence. The reason being, when we walk on a rope, we cannot move side-ways on it, only forwards and backwards, as it is too thin. However, an ant on the rope can move

side-ways as well as forwards and backwards. This is the basic idea of the Theory of Compactification of higher dimensions. This theory is a generalized form of Kaluza-Klein Theory, which was developed by Kaluza and Klein in 1926. It states that higher dimensions are not accessible to us because they are "compactified" (shrunken) and has taken the form of a Calabi-Yau manifold. This gives us a good possibility of existence of higher dimensions. Furthermore, the higher dimensions are theorized to include more and more parallel universes with different conditions and physical laws until a final dimension, which includes everything that is fathomable by humans.

The 10 dimensions, as required by the String Theory are as follows:

a. The First Dimension

As written by Euclid in his book Elements, "a line is breadth-less length". The first dimension comprises only length and no height (Euclid, 1956).

b. The Second Dimension

The second dimension adds breadth to the equation. This makes the existence of 2D geometric shapes like polygons possible. Moreover, we have control over this dimension too, since one can draw and manipulate geometric figures.

c. The Third Dimension

The third dimension is represented by depth or height. Every third dimensional object occupies space, due to its "volume". This is the dimension we are all familiar with, wherein one has complete understanding of above three basic dimensions, as the world we live in is three dimensional.

d. The Fourth (Temporal) Dimension

The fourth dimension is Time, which by itself is a temporal dimension as it is a way of measuring physical change. Moreover, in this dimension we have no control over the progression of time, but one can perceive time as it moves in one direction – towards the future. In furtherance, we do not have the ability to control time and make it move backwards. Therefore, time is not a special dimension, which makes it unique among the other dimensions, which are spatial. Hence, one can say that this dimension is present along with other dimensions, as time is required for entropy.

e. The Fifth Dimension – Entering Hyperspace

Dimensions after the fourth are known as hyperspace. The hyperspace is a popular concept portrayed in many science-fiction movies. However, with the evolution of String Theory and development of path towards a "Theory of Everything", hyperspace is hypothesized by many recent studies and modern-day scientists across the globe. Though hypothetical, it is widely believed. The fifth dimension is where the idea of parallel universes or "Multiverse" arises. It is hypothesized that in the fifth dimension, one could see a parallel universe that is slightly varied from our own, yet having the same origin and same physical laws as ours. This could also mean that a person who has control over the fifth dimension could travel between various universes, compare different universes and possibly even travel forwards or backwards in time.

f. The Sixth Dimension

In the sixth dimension, we would hypothetically able to see multiple parallel worlds having slight variations from ours, yet having the same origins and physical laws. It is believed that by mastering the fifth and sixth dimensions, one could have complete control over time.

g. The Seventh Dimension

The seventh dimension opens the possibility of existence of universes having varied origins and physical laws as compared to our own. This results in universes having a vast range of differences as opposed to parallel universe in the fifth and sixth dimensions with minor differences. Theoretically, a person who has mastered the seventh dimension could have control over multiple universes both similar and dissimilar to our own. Technically, they could be a "god" to us.

h. The Eighth Dimension

In the eighth dimension, one could witness the various possibilities of universes each having different origins and different physical laws. In other words, one could see all the parallel, branching universes which progress in different ways. Hence, a person who has mastered the eighth dimension would have control over multiple varied universes.

i. The Ninth Dimension

The ninth dimension consists of all universes with all possible origins and physical laws, wherein their histories and futures branching out into infinite possibilities. Therefore, someone who has mastered the ninth dimension could have control over

various universes with all possible origins and laws and also their infinite branches each having different futures.

j. The Tenth Dimension

The tenth dimension consists of everything that can ever be imagined by humans. It is the final dimension with respect to our abilities of imagination. Beyond this, we in the third dimension will not be able to fathom. Since the tenth dimension consists of everything, one who has mastered this dimension can control everything. In this every instance and possibility of every universe would be under their control. He or She who has mastered the final dimension would be god himself / herself.

Even Higher Dimensions

The tenth dimension is final only with respect to the abilities of our mind. There may be higher dimensions after the tenth probably eleventh, which will not be able to comprehend. However, it is also theorized that a universe with dimensions higher that of tenth or eleventh would be unstable and would collapse. So, in theory, there doesn't seem to be a definite limit to the number of hyper spatial dimensions.

Discussion - God in Science

The aforementioned explanations of ten dimensions are only hypothetical. The ten dimensions have been proposed only because it was needed to support the 'Superstring Theory'. There is no evidence for the contents of hyper spatial dimensions. However, one thing that is certain is that higher dimensions mean more universes and more possibilities respectively. We believe in the analogy of God to be someone or something supernatural and all-powerful, as if having control over the universe is not possible scientifically. Theoretically, God could be just someone in higher dimension state. For instance, God present in tenth dimension has absolute control over functioning of entire universe. Moreover, God may have the hyper spatial resources to create celestial bodies in our universe like we have bricks to make buildings. God may also have capabilities to destroy objects in our universe. The so-called "miracles" could just be a higher dimensional power at work.

Suggestion

The existence of God is always a paradox or abstract and subject of argument. However, with a deeper understanding of dimensions based on 'String Theory' and its higher order dimensions it provides a possible condition of existence of such powerful being unimaginable by humans. This chapter conceptually highlights certain aspects in accordance with dimensions. A holistic research needs to be conducted on true scriptures, whichever validated and accepted by global historians and failures of logical reasoning with many unanswered events and / or aspects by

scientific communities until now are the gateways to support and understand supernatural avenues in such higher dimensions, which could possibly prove existence of God.

Conclusion

Ever since rationalism took over the world, we followed the path of logical and rational science, which failed to explore anything that seemed illogical to us and dismissed it as a hoax. Moreover, we failed to utilize intuition and creativity to make discoveries or inventions, thinking that only facts and logic can help progress science. However, creativity is required for discovering facts, based on which we can build our knowledge about science. Hence, this rational mindset has hindered the progression of human civilization. Our belief in God is what makes us wonder about something beyond this material universe. Also, it is what kindles creativity in us and keeps all in this world with curious and fearful of unknown. Hence, we must understand that science does not mean that one has to follow atheistic ideologies, but has to be open-minded to analyze everything, logical or not, in terms of science, instead of dismissing it as a myth or hoax. These approaches discussed in this chapter could possibly answer to questions of paradoxes, wherein, one can conclude that an action resulting in paradox would just not be allowed by the natural law of universe defined by someone or something in higher dimensions. Perhaps, someone whom we would probably refer to as 'God' is the one without terming the aforesaid as supernatural.

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Manchester of Talent Acquisition In-House Recruitment & Talent Pipeline

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Abstract

In this ultra-modern world, everything has become modernized. Every sector has been updated including the IT sector, Education sector, and Non-IT sectors as well. Moreover, every employee in these sectors gets updated in their domain areas. However, most of the employees have become top-notch techno-geek and those employees choose the employer to work with. It is indispensable to create an attractive talent acquisition strategy to attract the righteous talented employee to get hired in an organization. There are so many talent acquisition methods like top-notch employer branding, intrapreneurship, in-house recruiting, talent pipeline, etc. This conceptual study intends to uncover the talent acquisition strategy such as in-house recruiting and talent pipeline. Also, attempts to unearth the truth behind acquiring talent resources through in-house recruiting and talent pipeline. Furthermore, steps to set-up in-house recruiting, reasons to adopt in-house recruiting, possible ways to build a talent pipeline in an organization, and benefits of using talent pipeline in a process of talent acquisition.

Keywords: In-house Recruiting, Talent Acquisition, Talent Pipeline, Employer, Employee.

Introduction

In this sophisticated and complex world, everyone is crawling to survive as well as to be on top. Similarly, every organization does fight and wheel for its sustenance and growth. Especially, IT sectors having a hard fight to be on top. It is to be noted that to be on top, every organization does need a topmost technical geek. It is employers' responsibility to attract the right talented employees, wherein some of

the best strategies to attract top most techno-geek are in-house recruiting, talent pipeline, etc. This talent acquisition helps to acquire an employee not only to fill the current position but also to fulfill the future requirements (Roy & Ratnawat, 2012). Talent acquisition is the main process of acquiring talent for future objectives too. It is very clear that talent acquisition isn't just about filling the vacancies; it is about long-term strategy (Ahmad & Schroeder, 2002). It is important to understand that for acquiring some top most talented employees, the employer should put effort into attracting them. In-house recruiting is one of the best strategies to get the right talented employee for the right job (Mukundhan, 2019). Also, in-house recruiting, talent pipeline does have potential and unique way to get into the right talented employees. The talent pipeline helps the employer to fulfill the sudden vacant positions (Gandz, 2006).

Literature Review

The research study conducted by Sinha and Thaly stated that the in-house recruiting process helps an employer to find the right talent. Also, they stated that every organization does have an in-house recruiter. In-house recruiters help an employer to hire permanent staff and their main aim to attract a talent to retain (Sinha & Thaly, 2013). A study conducted by Mohan & Sameer in 2014 enumerated the usage of in-house recruiting. Moreover, they stated that in-house recruiters change the administrative tasks to complex recruiting duties. Yet another study conducted by John explained that the talent pipeline is a blend of knowledgeable candidates able to accept recently vacated positions or even newly created positions (Jain, 2007). The On-hold talent pool can include internal candidates who are bright and can be interchanged or promoted from within the organization as well as acquiring the candidates from different external sources such as online job portals, referrals, and career web-pages (Phillips, 2008). Also, a talent pipeline is defined as a ready pool of potential candidates who are qualified and prepared to step up and fill relevant key roles within the organization as soon as they fall vacant. This on-hold talent pool can include internal employees who show promise and can be promoted from within the organization as well as candidates from external sources like referrals, online job portals and career web-pages (Prarthana, 2019).

Objective

To conceptually understand the talent acquisition strategies such as in-house recruiting and talent pipeline.

In-House Recruiting – An Overview

In-house recruiting is one of the positive ways of filling freshly opened positions. The major reason for this kind of acquisition is that present employees are aware of the company's mission, vision, and culture. Similarly, the employers are aware of

the characteristics and also easy to find a talented employee who can be an ideal candidate for any upcoming position. Every organization should try in-house recruiting before looking outside our own company. Also, it has to enable an in-house recruitment team inside to meet its objectives.
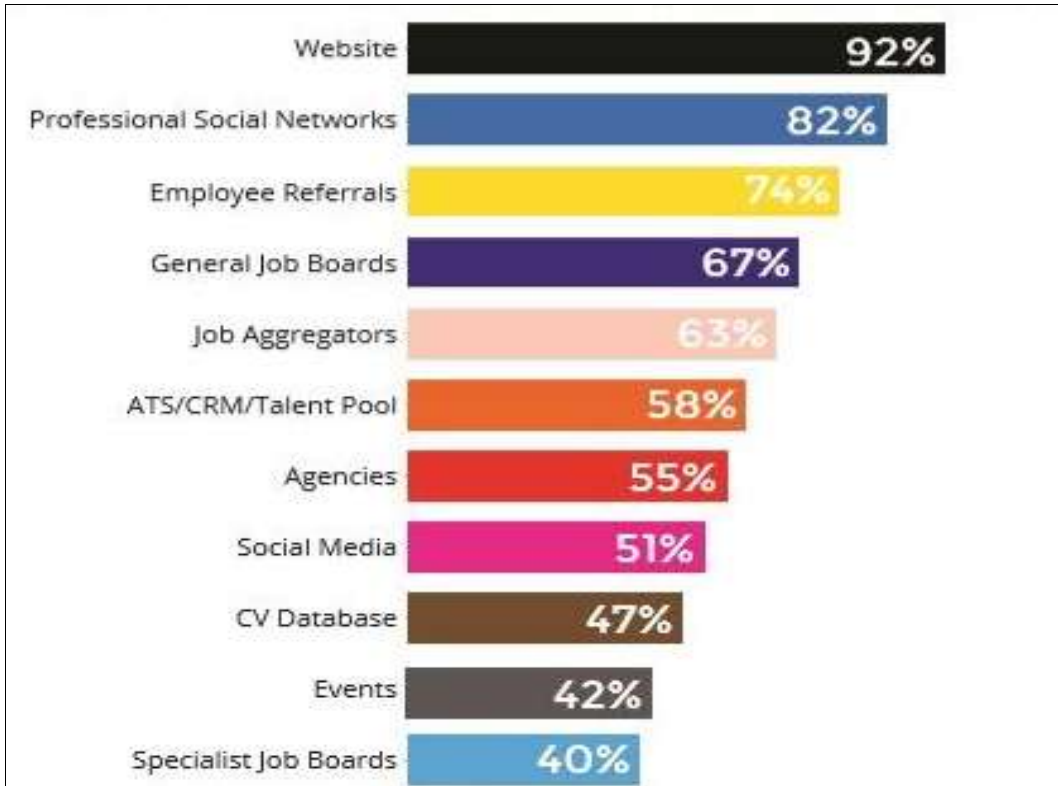

Fig. 1

(Source: Daily Insights for Business Leaders)

This team advertises the job on their website so then they can attract the right talented employees from their organization. Also, it uses internal databases and websites to identify talented employees and build a broad network of potential candidates. The daily insights for business leaders have been studied through a survey, wherein it has been found out that to attract talented employees most of the organizations do use their websites. Moreover, the current employees are more adaptable than a new hire. The percentage distribution of aforesaid aspects in terms of recruitment sources are indicated in the above figure.

Discussion

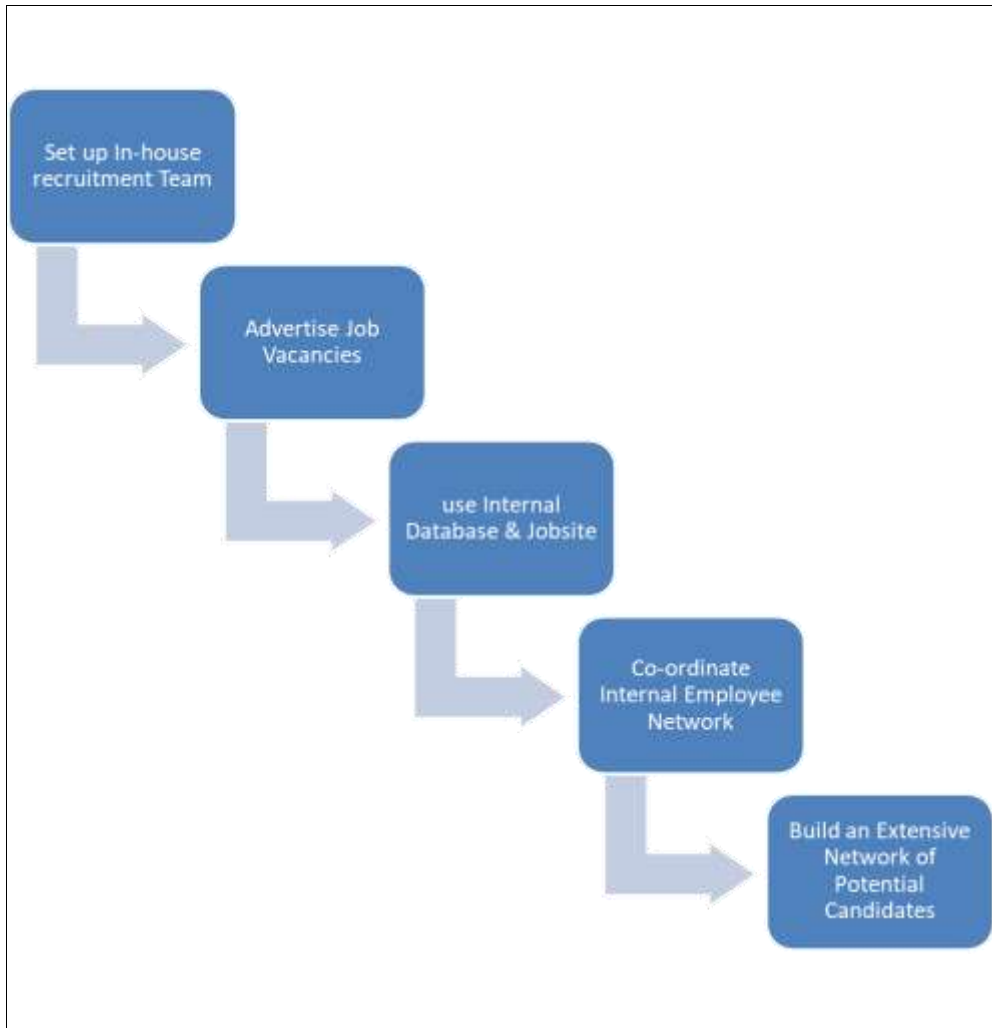## Set Up In-House Recruitment

Fig.2

In contemplation of acquiring the right talent, organizations should set up an in-house recruiting team so then an employer can be less burdened to find the right talented employees, which is indicated in the above figure. Once the team has been set up, they will advertise the job vacancies on their website. Once pop up has been shown, the in-house recruiting team started to search for the right candidate using an internal database as well as job sites. This helps to co-ordinate the internal employees' network. Once everything has been built, an employer can keep track of potential candidates.

Table 1: Pros & Cons of In-House Recruiting

S. No.	Advantage	Disadvantage
1	Reduce time to hire	Create resentment among managers & employees
2	Reduce the cost	Leave a gap in an existing workshop
3	Shorten onboarding time	Result in inflexible culture
4	Strengthen employee engagement	Limit pool of applicants
5	Less risky	Less respect
6	Improves employer brand	Limitation of options

Usage of In-house recruiting helps in reducing the time to hire and cost of acquisition. One of the main reasons to adopt in-house recruiting is to improve the employer brand. Like a coin has two sides, in-house recruiting does have a double side. In-house recruiting creates the only limitation of options.

Talent Pipeline

A talent pipeline is a top-notch people where an organization may want to hire them in the future. It is like holding and tracking the future needs of an organization. Moreover, some of the major positions like executive positions, team leads can be replaced by the talent pipeline. This develops a long-term relationship with great potential candidates. They can even become a top executive. Thus, the talent pipeline strategy becomes the outcome of "relationship-centric" recruiting. This in turn changes the company's strategy from reactive to proactive acquisition. It is important to understand that instead of searching for a candidate to fit into a position, talent pipelining focal point is to build a relationship with a potential talent for meeting the future requirements and opportunities within an organization.
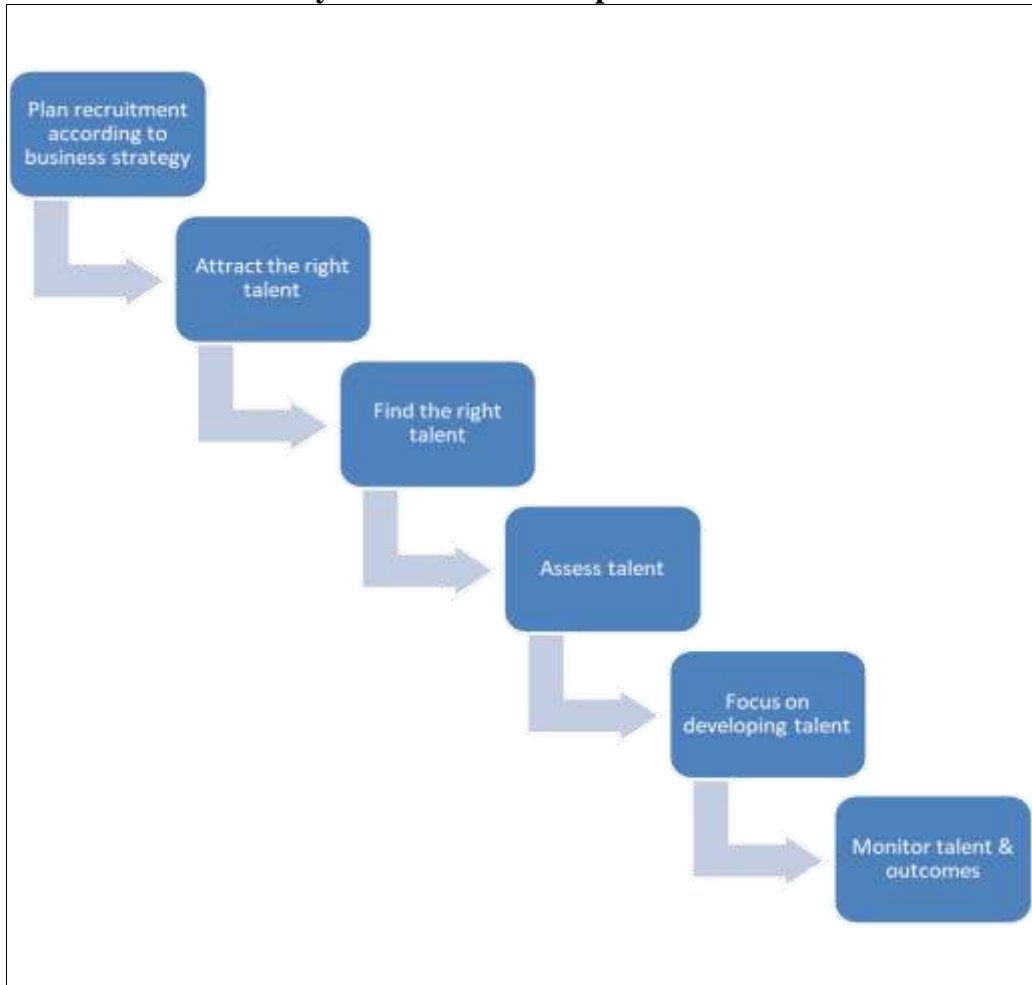
Ways to Build Talent Pipeline Model

Fig. 3

To build a talent pipeline, the HR managers should understand recruitment according to business strategy in accordance with the Talent Pipeline Model shown in the above figure. Once everything has been set, the organization should focus on keeping an eye on top-notch candidates. Moreover, the employers should find the right talented employee from networking events, Likend In, dedicated recruitment campaigns, and leverage existing contacts. Once found a talent for future opportunities, the organization should have to assess talent and focus on developing it. The increasing of talent pipeline as much as an organization can help gauge future opportunities. The pros and cons of talent pipeline is indicated in Table 2.

Table 2: Pros & Cons of Talent Pipeline

S. No.	Advantage	Disadvantage
1	Quality of hire is high	Some don't want to be in a talent pool line
2	Identify talent earlier	Talent can find other company
3	Higher retention rate	More competition
4	Higher offer acceptance rates	Limit pool of applicants
5	Lower salary costs	Limitation of options
6	Critical positions will be filled easily	Lowest positions won't be filled
7	Superior candidate experience	Requires a lot of time
8	More diversity prospects and hires	Higher cost in recruitment

The talent pipeline has both advantages as well as disadvantages. Though there are many advantages and a disadvantage, adopting a talent pipeline is one of the best ways to acquire a talented employee. The talent pipeline increases the retention rate and helps to hire people from diverse cultures.

Suggestions

➢ Employers should have a pulse on present trends and eyes on future. This will be carried out with the help of talent pipeline.
➢ Through in-house recruiting, employers can identify the best talent who uses their creativity and strong in their field.

Conclusion

In this world, everything has become a competition and many different competitions do exist like one-to-one, organization-to-organization, etc. The IT sector has been experiencing the biggest competition always due to globalization and swift demands. Every organization is fighting its level best to be on top of its industry, wherein talented employees make that happen very fast. The most important thing is that employers should do periodically is to acquire top talented employees for achieving the phenomenal growth of organizations. Moreover, to acquire a top talented employee the employer should look into every strategy. The best strategy is acquiring a talented employee through in-house recruiting and identifying another in the talent pipeline. This helps a lot to find out good talented employees and retain them for meeting the requirements and fulfilling professional exigencies. Also, the talent pipeline employer can hire an employee within the organization as per the immediate need for fulfilling positions accordingly at large.

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Design and Implementation of Wearable Photovoltaic Cell

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Abstract

Nowadays, Product Integrated Photovoltaic (PIPV) plays a major role in renewable energy sources, particularly for the infantry soldiers and defense industry. During war field, soldiers having various harms such as very cold temperature and some region like hot weather. Hence, in this risky process they cannot always be having the tools with battery for communication equipment and still in case they are prepared with batteries, it will be a big burden for them. Thus, to overcome this difficulty, a light weight wearable solar device being designed especially for the warrior. The proposed research contains a design, which is a portable-charging unit that utilizes flexible solar cells. The flexible solar cells are tested in different environment to find out the best arrangement and design for soldier's bag.

Keywords: Product Integrated Photovoltaic (PIPV), Soldiers, Wearable Solar Jacket, LCD, Aurdino Embedded Board.

Introduction

Despite, modern advances in military technology, the soldier of infantry continues to play an important role in defense. It is still the infantry soldier in the age of stealth jets, nuclear munitions, and guided weapons that examines and secures a location to determine whether the target area is cleared and the enemy defeated. The modern infantry soldier uses today's available electronic technology and resources to penetrate into hostile and challenging terrain, wherein armored vehicles cannot trespass and overcome the enemy [1]. The critically important power requirements

of modern soldier in accordance with electrical technology is always much higher than that of civilian counterpart. In addition to this, the operating environment is far more aggressive and demanding than those of civilian applications and loss of power will endanger the life of infantry soldier [2][3]. This is the main reason behind massive battery overload, which accounts for almost 25 percent of overall load of equipment (including deadly, safety and communication). However, there is an uncontested restriction of maneuverability and operational flexibility as well as substantial physical and cognitive strain due to the aforementioned fact. Recently, the advances in sustainable energy and in particular advanced flexible and wearable photovoltaic (PV) technologies could provide a potential solution to this problem by eliminating or significantly reducing battery usage [3]. This research mission is studied by the Solar Soldier Programme, which is partly funded by the MOD's Defense Science and Technology Laboratory (DSTL) in UK and Engineering and Physical Sciences Research Council (EPSRC).

Objective

- To design a light weight wearable solar device being designed especially for the warrior
- To miniaturize by combining with the greater flexibility of solar cells towards leading to new opportunities for wearable solar technology
- To charge through a USB connection integrated into clothing thereby bringing an extra layer of convenience for users
- To swathe of electronic devices, such as mobile phones, could be charged on the move

Solar Panel and Its Types

Photovoltaic modules use light energy (photons) from Sun to generate electricity through photovoltaic effect. The majority of modules use wafer-based crystalline silicon cells or thin-film cells. The structural (load carrying) member of a module can either be top layer or back layer. The cells must also be protected from mechanical damage and moisture [4]. Most modules are rigid, but semi-flexible ones based on thin-film cells are also available. The cells must be connected electrically in series, one to another. Externally, most of photovoltaic modules use MC4 connector's type to facilitate easy weatherproof connections to the rest of the system.

Fig 1: Solar Grid   Fig 2: Semi Flexible Solar Cell   Fig 3: Flexible Solar Cell

Module electrical connections are made in series to achieve a desired output voltage or in parallel to provide a desired current capability. The conducting wires that take the current off the modules may contain silver, copper or other non-magnetic conductive transition metals. Bypass diodes may be incorporated or used externally, in case of partial module shading, to maximize the output of module sections still illuminated [5]. Moreover, special solar PV modules include concentrators in which light is focused by lenses or mirrors onto smaller cells. This enables the use of cells with a high cost per unit area (such as gallium arsenide) in a cost-effective way. Solar panels also use metal frames consisting of racking components, brackets, reflector shapes, and troughs to better support the panel structure. It has light weight and thinnest panels and we can achieve highest output per square foot. Moreover, it is optimal for canvas bimini / dodger installations on boats and yachts. Huge variety of sizes and shapes are available. The Fig. 2 shows semi flexible solar cell, wherein thin film solar panels come from a second-generation solar cell, which is made by layering one or more thin films of photovoltaic material on a "base", a substrate of plastic, glass or metal. The final result is a panel much thinner than the average of mono and polycrystalline solar panels, which makes them flexible and lighter. This is shown in Fig 3, which means the roof has to support a very light structure without racks. Also, producing these panels also has a lower cost, so the final price is very competitive. Table 1 shows the comparative study of various solar panels [6-7].

Table 1: Comparison of Solar Panels

Solar Panel Properties	Rigid Solar Panel	Semi Flexible Panel	Flexible Solar Panel
Size	Very Large Depends on Need	Compact	Small Dimension can also be Designed
Weight	Very Bulk	Low Weight	Very Low Weight
Efficiency	Low	Moderate	High
Cost	Very High	Optimal	Low Cost

Arduino Board (Microcontroller)

Aurdino is a type of open source computer hardware and software company comprising of project and user community that designs and manufactures single

board microcontrollers and microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical and digital world. The Aurdino boards are able to read inputs-light on a sensor, a finger on a button and turn it into an output - activating a motor, turning on an LED. Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. Uno is the best board to get started with electronics and coding. If this is your first experience tinkering with the platform, the Uno is the most robust board you can start playing with [2-4]. Uno is the most used and documented board of the whole Aurdino family. The parts of Arduino board shown in Fig 4.
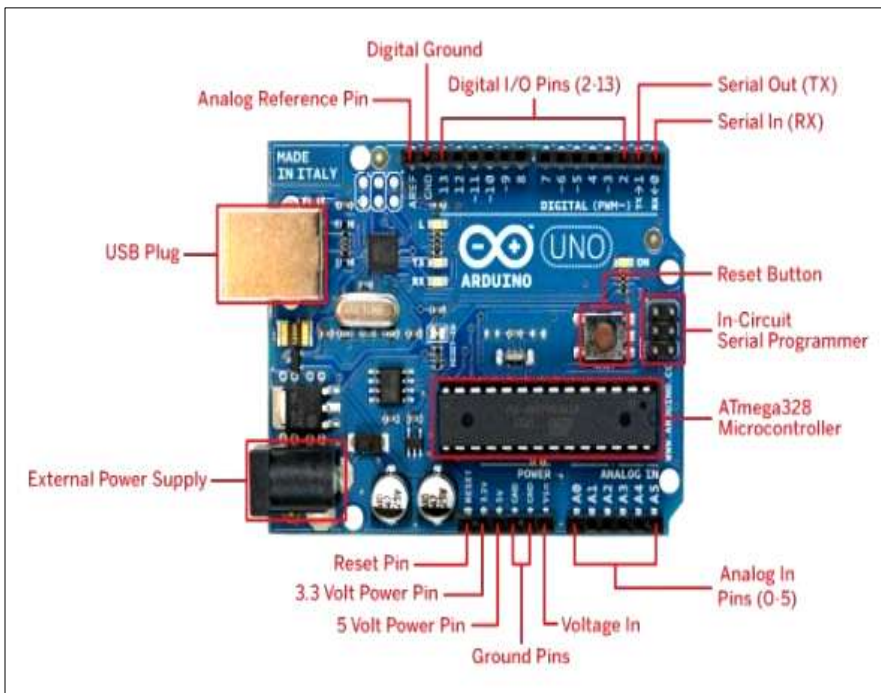

Fig 4: Arduinouno Parts

Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. You can tinker with your Uno without worrying too much about doing something wrong, worst case scenario you can replace the chip for a few dollars and start over again. 'Uno' means one in Italian and has been chosen to mark the release of Arduino Software (IDE) 1.0. The Uno board and version 1.0 of Arduino Software (IDE) were the reference versions of Arduino, now

evolved to newer releases. Uno board is the first in a series of USB Arduino boards and reference model for Arduino platform. Moreover, for an extensive list of current, past and outdated boards one can see to Arduino index of boards. The name Arduino comes from a bar in Ivrea, Italy, whereas some of the founders of project used to meet. The bar was named after Arduino of Ivrea, who was the margrave of March of Ivrea and King of Italy [8].

Hardware Implementation

A standard monocrystalline or polycrystalline solar cell is made up of silicon wafers. They are typically up to 200 micrometers thick, which is slightly thicker than a human hair. Thus, in order to make a "semi-flexible" solar cell, those silicon wafers must be sliced down to just a few micrometers wide. Also, using these ultra-thin silicon wafers gives solar cell many unique properties, including flexibility for some models. The wearable solar cell is shown in the Fig 5a [9]. A solar cell or photovoltaic cell is an electrical device that converts the energy of light directly into electricity by the photovoltaic effect, which is a physical or chemical phenomenon. The block diagram of proposed system is shown in the Fig 5b.
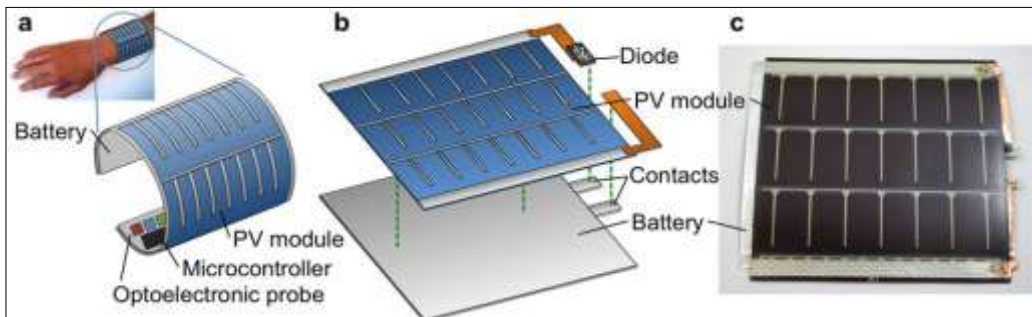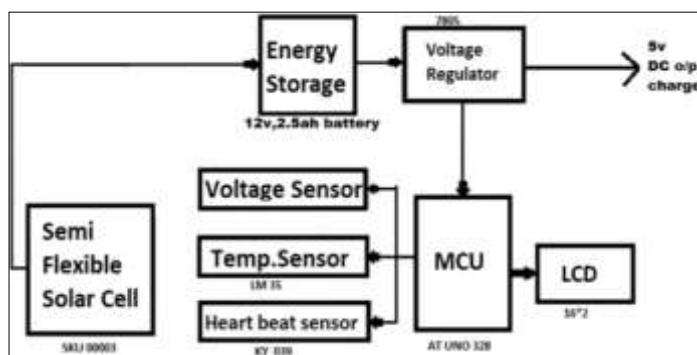

Fig 5a: Wearable Solar Cell

Fig 5b: Block Diagram representation of Proposed System

A voltage sensor is able to determine and even monitor and measure the voltage supply from the flexible solar panel. It is then able to take those measurements and turn them into a signal that one will then be able to read. The LM35 is one kind of commonly used temperature sensor that can be used to measure temperature with an electrical o/p comparative to the temperature (in °C). It can measure temperature more correctly compare with a thermistor. This sensor generates a high output voltage than thermocouples and may not need that the output voltage is amplified [10]. The LM35 temperature sensor is used to detect precise centigrade temperature. The output of this sensor changes describes the linearity. The o/p voltage of this IC sensor is linearly comparative to the Celsius temperature. The operating voltage range of this LM35 ranges from -55˚ to +150˚C and it has low-self heating. This is operated under 4 to 30 volts. The most extensively used electronic devices are operational amplifiers, which are certain kind of differential amplifiers. The variation between input terminals amplifies the circuit is shown in Fig 6 [5] [6].
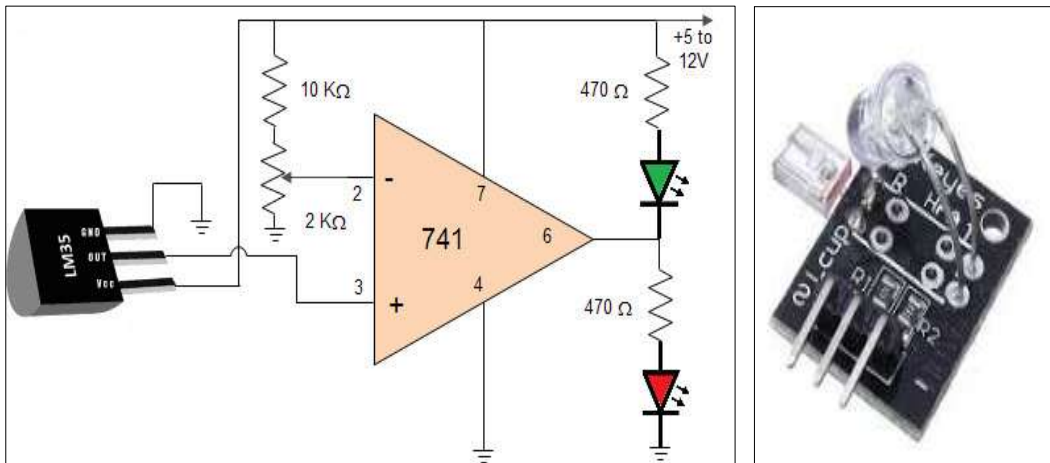

Fig 6: Temperature Sensor internal Circuit diagram

The liquid crystal displays (LCDs) are commonly used to display data in devices such as calculators, microwave ovens and many other electronic devices. Fig 7 indicates the method to use a 16x2 LCD with an Aurdino. The 16x2 LCD used in this experiment has a total of 16 pins.
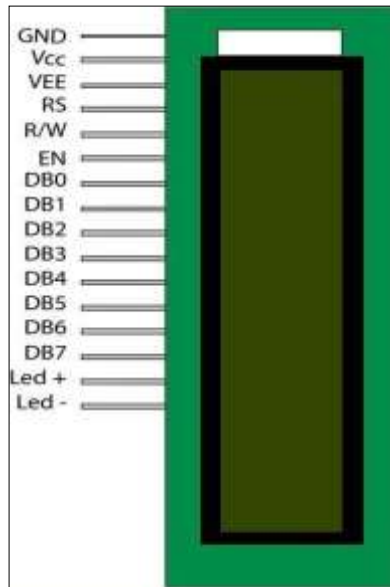
Fig 7: LCD Display

The number of times the heart beats per minute (BPM) is termed as heart beat rate, wherein the pulse can be felt through any artery that lies close to skin. Heartbeat sensor provides a simple way to study the function of heart, which can be measured based on the principle of psycho-physiological signal and used as a stimulus for the virtual-reality system.

The amount of blood in the finger changes with respect to time and signals are recorded accordingly and indicated in Fig 8.
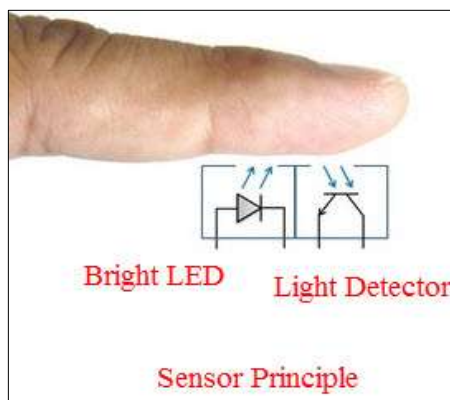
Fig 8: Heart Beat Sensor

The sensor shines a light lobe (a small very bright LED) through ears and measures the light that gets transmitted to Light Dependent Resistor (LDR). The amplified

signal gets inverted and filtered in the Circuit. Thus, in order to calculate the heart rate based on blood flow to the fingertip, a heart-rate sensor is assembled with the help of LM358 OP-AMP for monitoring heartbeat pulses, wherein each Sensor Output is shown in Fig 9 indicated below:
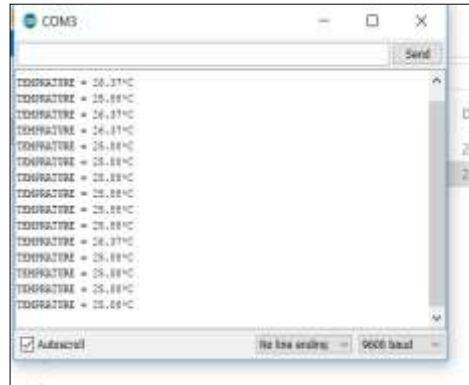
Fig 9: Output of Temperature Sensor

The Output of Temperature, Voltage and Heartbeat sensor is shown in Fig 10.


Fig 10: Output of Temperature, Voltage and Heart Beat Sensor

Suggestion & Conclusion

Product Integrated Photovoltaic (PIPV) plays a major role in renewable energy sources, particularly for the infantry soldiers and defense industry. During war field, soldiers having various harms such as very cold temperature and some region like hot weather. Hence, in this risky process they cannot always be having the tools with battery for communication equipment and still in case they are prepared with batteries, it will be a big burden for them. The proposed research contains a design, which is a portable-charging unit that utilizes flexible solar cells. The flexible solar cells have to be tested in different environment and climate conditions to find out

the best arrangement and design for soldier's bag. The hardware is developed to help soldiers by monitoring the heartbeat, temperature and to charge the communication devices. Therefore, it requires thorough constant testing, standardization and improvement. Moreover, to overcome the critical battery down situation of communication devices semi flexible solar panel is chosen and fabricated within the soldier's bag through programmed embedded controller so as to use it in emergency situation. This chapter provides appropriate solution to military soldier at war fields to carryout light weight wearable solar device as charging units than carrying heavy electrical equipments.

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Land Use and Land Cover Spatial Distribution in Pondicherry Coastal Region Using Remote Sensing and GIS Techniques with Special Reference to Aquaculture Development

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Abstract

The remote sensing with GIS plays a major role in land use land cover changes. The satellite imageries of IRS 1C LISS III (1998), IRS 1D LISS III (2000) and P6 (2008 & 2014) have been used for land use and land cover map preparation. The change detection study has been carried out in a GIS environment. The results observed through many research studies have showed agriculture land was reduced from 10,968 ha to 6214.24 ha due to rapid industrialization and settlements. Pondicherry having a coastal line of 45 km also has had significant potential in fisheries. Interestingly out of 800 ha of potential fisheries area, only 138 ha of aquaculture land is utilized. Hence, commercial aquaculture can be encouraged in this area, as it should not affect the other area. It is a good economic source for local people. Moreover, the socio-economic impacts on vegetation, with settlement, plantation, aquaculture, agriculture, fallow lands and marshy lands have also been identified. The present study will be useful for policy makers towards further development and management.

Keywords: Land Use, Land Cover, Changes, Coastal, Aquaculture, Agriculture, Remote Sensing, Pondicherry.

Introduction

Pondicherry has been experiencing a significant shift in its economy. The reason being economic activity has moved away from agriculture to industries and services. Land is the most significant among the natural resources of the country and is being used by people for various purposes. The basic requirement of human society is food and most of the inhabitants depend on agriculture for their livelihood. Overpopulation has resulted in increasing the pressure on coastal land which accelerated increase in land value and the diversity of the land uses. Land is one of the important phenomena, owing to its progressive or cyclic changes due to dynamic processes and it supports a variety of economic activities such as

industrial, commercial, recreation, etc.   (Thanikachallam, 2005). Despite the negative overall growth in agriculture and aquaculture, it remains an important source of livelihood for Pondicherry people and must register significant growth rates in order to improve the living of those engaged in it. Thus, in order to examine how this may be brought about, it is necessary to identify both the constraints faced by agriculture and its potential information extracted by integrating remote sensing data with conventional data can provide the picture about coastal land use. Furthermore, such an integrated data and information could be obtained only through GIS and Remote Sensing tools. It is to be noted that by using these tools we can accurately assess the land, water bodies, socio–economic and human resources (Krishnakumar, et al. 2011). The land use maps were prepared for the study area for four different years viz. 1998, 2000, 2008 and 2014 using IRS IC, ID and P6 data. The maps of four different years were prepared so as to identify the changes that have occurred in the Land use categories. In the present study multi temporal satellite data were used to study the changes in land use and land cover changes for the aforesaid periods.

Literature Review

The remote sensing application plays a vital role in aquaculture studies it is important to review the research carried out during the past on the land use mapping coupled with their usage and GIS applications. A research study by Barlet and Klemas have showed that remote sensing is useful for delineation of wetlands boundaries and the areal extent Spectral contrast between species of interest can be modified by intra-specific variability in canopy and leaf characteristics the distribution of species can be mapped on composition (Barlet & Klemas, 1979).

The distribution of species can be mapped on composition of species acquired through remote sensing which can be used to make an inference concerning tidal and salinity regimes and habitats available for estuaries and terrestrial fauna (Barlet and Klemas 1979). Howrah in 1984 has described seasonal and long-term changes. He has used chromaticity analysis for suspended sediment concentration measurement from landsat data Methodology for change detection includes, the stages of background preparations, loading the data, preprocessing, image enhancement, classification, post classification, change and signature file extensions (Howrah, 1984). A study by Kapetsky in 1987 has used Remote Sensing (Landsat TM CCT) and GIS as a tool to plan for aquaculture expansion in Gulf of Nicoya, Coasta Rica and has found GIS to be a very useful tool for the aquaculture planning. The mapping up to a scale 1:250000 are possible as mentioned by Anderson in 1973.

The IRS data was visually as well as digitally, analyzed for evaluating, their suitability for coastal wetland mapping of the Gulf of Kachchh The distinction between non-vegetated categories was not sharp when LISS-I data was used as compared to MSS

data The identification of various wetland features using LISS-I and TM data was found to be comparable in both types of analysis as explained by Nayak in 1988. Also, Raine studied current land use and changes in land use over time in coastal zone of Thailand and they quantified the land use in coastal zone and investigated the changes in land use practices between the years of 1953, 1975 and 1991 in Thailand (Raine, 1994).

A study conducted by Krishnamoorthy in 1995 on application of remote sensing and geographic information system in survey and site selection for aquaculture practices revealed that aquaculture suitable for farming can be effectively identified by macro level land survey through integration of remote sensing, conventional data and GIS. Yet another research study carried out by Gupta in 1997 has studied the aquaculture site selection using remote sensing and GIS and its impact on the environment in South Gujarat He has used Arc/Info GIS packages, for aquaculture site selection and discussed.

The various issues such as pollution and mangrove conservation related to aquaculture. In addition to this, Krishnakumar et al. in 2011 have studied that the land use/Land cover changes in Nagapattinam coastal area and revealed that satellite data has the unique capability to detect the changes in land use / land cover quickly and accurately and the data is very useful and effective for getting results of temporal changes of land. Anusuya and Emayavaramban in 2017 have studied that land use and land cover changes mapping has given differentiation of research through various investigation.

Need & Relevance

This study will give a clear picture of current status of environmental impact and land use and land cover changes of Pondicherry coastal area. From this study we can prepare a model of sustainable development of land utilization. This study highlights the impact of industries and ecologically sensitive area for preparing coastal management plans. Moreover, the coastal land use maps are useful for identifying areas under erosion and critical habitat. It is important to note that explosive growth of the industry adversely affect the environment, ecosystem and degrade man's economy and recreation facilities. This problem has become crucial in the recent years and only alternative is the implication of EIA concepts to evolve environmental management strategies for optimum use of a land area without disturbing the natural equilibrium of the ecosystem. As growth continues, the landscape is altered. The forests, agriculture and farmlands are converted and developed as business and residential areas.

Land use is a product of interactions between cultural and physical needs of society and the natural potential of land. The land cover change has long been viewed as a continuing process with periods of rapid change. Improper land use often causes

various forms of environmental degradations. Hence, for sustainable utilization of the land ecosystem, it is essential to know the nature, characteristics, extent and location of soil resources, productivity, suitability and limitations for various land uses. Recently, several international agencies, including Food and Agricultural Organization (FAO) and United National Environmental Protection (UNEP), have initiated a discussion on the subject of Environmental Impact Assessment (EIA) and land use/cover classification and databases and have commissioned preparatory studies for the purpose of rectifying the situation.

Objectives

➤ To identify and delineate the various land use categories from remote sensed data using visual interpretation over the period of ten years (1998-2014)
➤ To identify appropriate monitoring strategies to track impacts and provide an early warning system
➤ To suggest and recommend suitable measures for sustainability

Methodology

Profile of Study area

Pondicherry now referred to as 'Puducherry', which means new village. The Pondicherry district is located on the Coromandal Coast between 11° 45' and 79° 52'E longitude. It is bounded on the east by Bay of Bengal and Tamil Nadu state on its other three sides. It is also the capital with the same name and comprises of three other enclaves including Karaikal in Tamil Nadu, Yanam in Andhra Pradesh and Mahe in Kerala. The coast is of curved in nature. Some beach ridge complexes at 3m and 5m above sea level are seen, wherein a submerged shoreline is indicated by the presence of skeletal sands.

Data Material & Software Support

Data Used

a. Primary Data

IRS 1D LISS III and P6 data of 1998, 2000, 2008 and 2014 are used for Pondicherry.

b. Secondary Data

Survey of India toposheets No. 57P/16 and 58M/9 & 10, on 1:50,000 scales are used for Pondicherry.

c. Software Support

In order to identify and transform the information recorded on the IRS 1C,1D images and SOI toposheets, computer with ERDAS image processing software and ArcGIS, Arc view packages were used.

Procedures & Standardization

- ❖ Rectification has been done for the primary and secondary data.
- ❖ Base map was prepared for Pondicherry using NRSA Satellite data.
- ❖ Digitizing the thematic maps and derived maps using GIS software (ARC/Info).
- ❖ Area calculation and Validation have been carried out with the field-oriented ground truth collection.
- ❖ Final Land use maps were prepared for different years.

The methodology adopted for study area is indicated in Fig. 1.
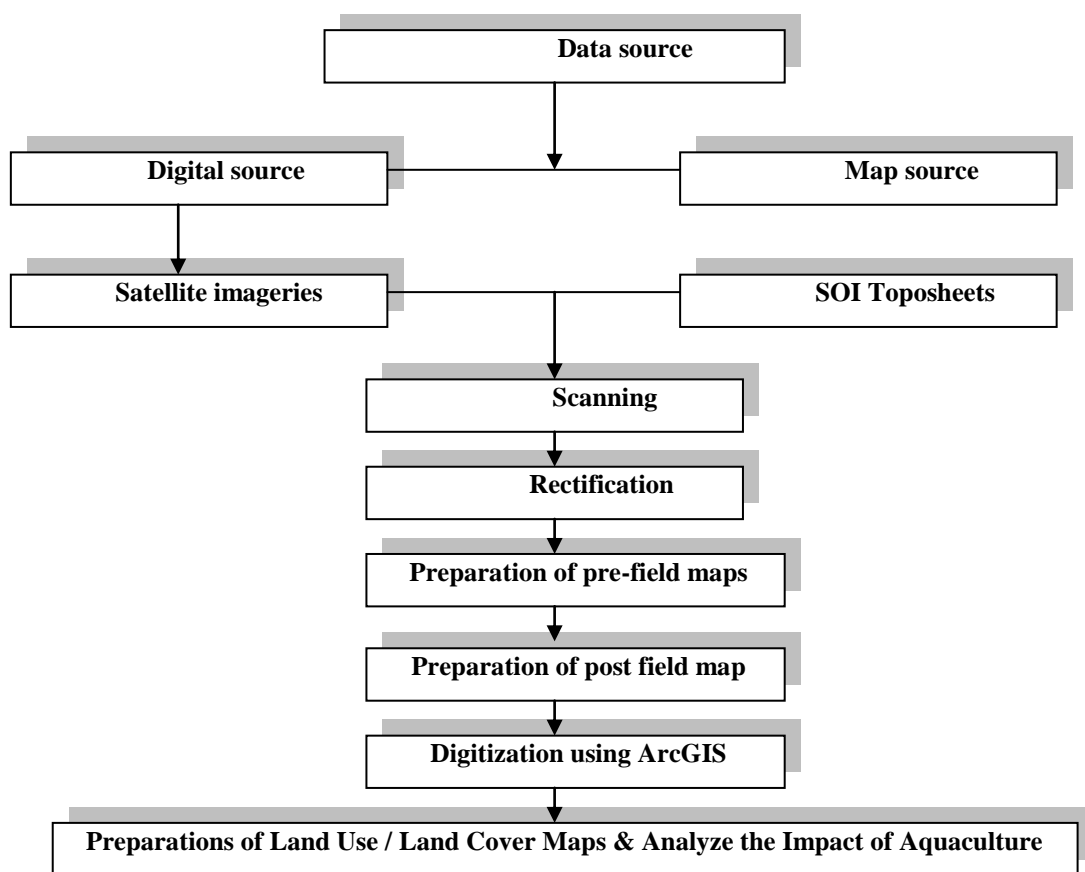
Fig. 1 Flow Chart for Methodology

Results & Discussion

In the present study multi temporal satellite data were used to study the changes in land use / land cover for the period of 1998, 2000 and 2008 using IRS 1C, 1D and P6 data. The maps for three different years (Fig 2 to Fig 5) were prepared so as to identify the changes that have occurred in the Land use categories. Maps were interpreted in order to compare the boundaries of land use classes from which the difference were calculated accordingly.
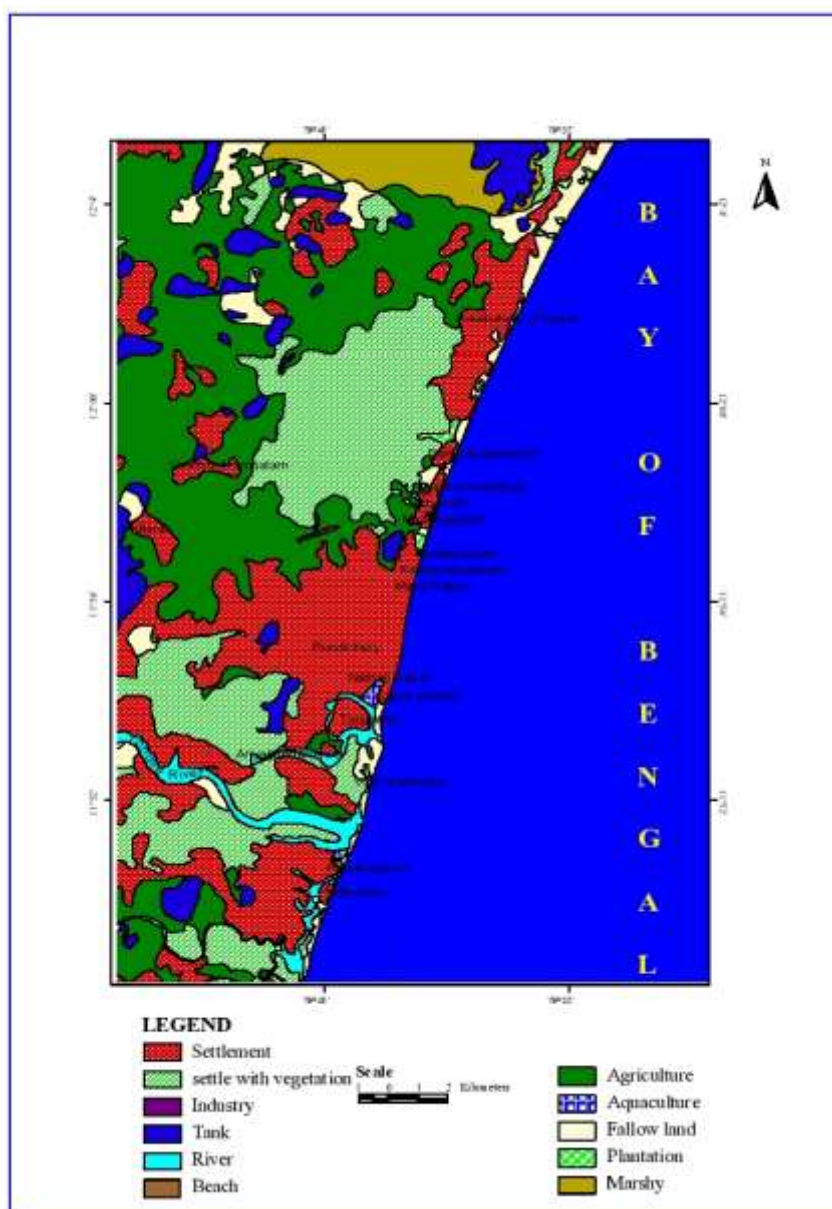
Figure 2: Land Use / Land Cover Map of Pondicherry in 1998
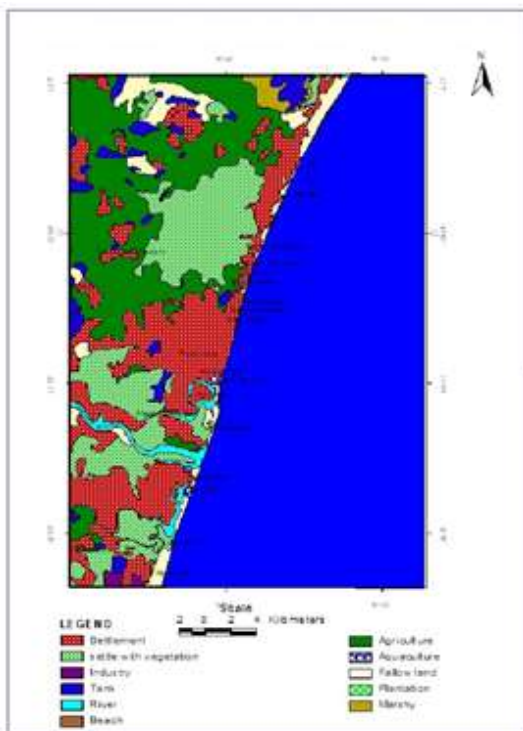
Figure 3: Land Use / Land Cover Mapping of Pondicherry in 2000
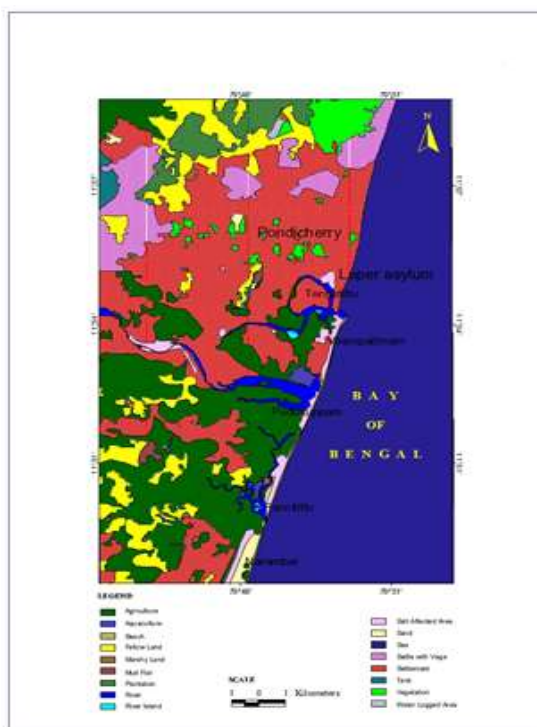
Figure 4: Land Use / Land Cover Map of Pondicherry in 2008
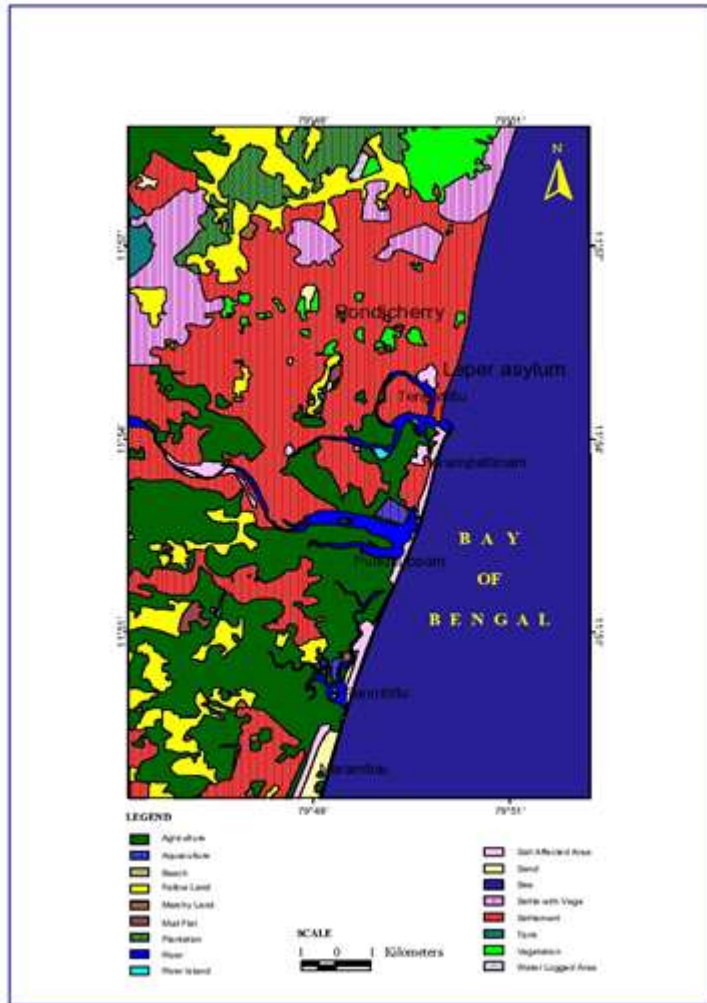
Figure 5: Land Use / Land Cover Map of Pondicherry in 2014

Agriculture

From the land use maps prepared during 1998 as indicated in above Fig 2 it can be observed that agriculture occupied 10,968.9 ha (Table 1) and subsequently, during 2014 the area occupied by agriculture was drastically reduced to 6214.24 ha (Table 3). This change is due to the urban and industrial development, which is the main problem in this area. Another factor is increasing population rate, which reduces the agriculture area. The agricultural land conversion is the most important impact and it also affects the crop production in Pondicherry. Most of the agriculture area converted to residential area, wherein similar research studies in this area have been conducted by Nagamani and Ramachandran in 2003. In 2011 Krishnakumar et al. conducted similar study in Nagapattinam coastal area, wherein they revealed that there are a number of socio-economic and ecological consequences of land use

changes in Pondicherry. It has been found that the reduction in agriculture labour force and population growth are the most important human driving forces. Moreover, the population growth, due to natural increase and migration allows various land use features to be easily converted and developed into housing estate, townships, industrial estates and recreational facilities. Such developmental processes cause an increase in the education level, while simultaneously causing a decrease in agricultural labour force (Anusuya & Emayavaramban, 2017). The most important and immediate impact of paddy land conversion is the adverse effect on rice production in the area and socio-economic conditions of the farmers and farm workers. There are more than nine lakh farm workers in Pondicherry, who get their income mainly from paddy cultivation. There should be a mechanism to conserve the existing paddy lands and also to implement an action program for increasing the production and productivity of paddy by providing essential science and technology input.

Table-1 Land Use and Land Cover Area Calculations in 1998 for Pondicherry

Categories	Area (in ha)
Agricultural Land	10,968
Salt Pan	159.208
Settlement with Vegetation	9189
Settlement	8078.9
Aquaculture	133.7
Fallow Land	1783.1
Industry	50.5
Marshy Land	256.6
Plantation	243.6

Table-2 Land Use and Land Cover Area Calculations in 2000 of Pondicherry

Categories	Area (in ha)
Agricultural Land	8649.16
Salt Pan	86.208
Settlement with Vegetation	9219.61
Settlement	9239.6
Aquaculture	138.76
Fallow Land	2120.1
Industry	134.673
Marshy Land	232.78
Plantation	385.1

Table-3 Land Use and Land Cover Area Calculations in 2008 of Pondicherry

Categories	Area (in ha)
Agricultural Land	7371.16
Salt Pan	76.208
Settlement with Vegetation	9457.8
Settlement	10,761.71
Aquaculture	138.76
Fallow Land	1432.1
Industry	267
Marshy Land	79.78
Plantation	566.2

Table-4 Land Use and Land Cover Area Calculations in 2014 of Pondicherry

Categories	Area (in ha)
Agricultural Land	6214.24
Salt Pan	76.208
Settlement with Vegetation	1228.63
Settlement	13,571.71
Aquaculture	138.76
Fallow Land	1532.1
Industry	301.01
Marshy Land	79.78
Plantation	467.12

Aquaculture

Aquaculture occupied 133.7 ha during 1998 (Table 1) that has increased to 138.76 ha during 2014 (Table 4). Furthermore, from Figures 2-5, it can be clearly seen that aquaculture activities in Pondicherry have not in any way affected the agricultural activities. Similar research studies have been conducted by Krishnakumar et al. in 2011. The aquaculture occupied only in the brackish water area and not in other areas. Surprisingly, the aquaculture development is very minimum in Pondicherry region, wherein only 138 ha of brackish water shrimp farms land available have been developed from the available potential area of 800 ha. In Pondicherry region most of the farms are small with less than 2 ha. Very few farms are larger than 5 ha (Guidelines of Aquaculture Authority, 2001). If aquaculture is properly used in Pondicherry area then it is really a good source of income for local people.

Settlement

The settlement spread over an area of 8078.9 ha during 1998, 9239.6 ha in 2000, 10761.71 ha in 2008 and 13571.71 ha in 2014. It is over a period of 8 years, the settlement area was increased because of population growth and urban development. A similar observation has been made by Nagamani and Ramachandran (2003) in their studies.

Fallow Land

It is defined as agriculture land, which will be taken up for cultivation is temporarily allowed to rest and remain uncultivated for one or two seasons but not less than one year. In the imagery fallow land appears yellow or greenish blue tone (Balak Ram & Kolarkar, 1993). The fallow land in Pondicherry was occupied as 1783.1 ha in 1998, 2120.1 ha in 2000, 1432 ha in 2008 and 1532.4 ha in 2014.

Settlement with Vegetation & Industrial area

The total area of settlement with vegetation during 1998 was 9189 ha, which has increased to 9219.61 ha in 2000, 9467.8 ha in 2008 and 1228.30 ha in 2014. The settlement with vegetation is steadily increased from 1998 to 2014. The industrial area is another land use area, which has increased from 1998 to 2014. In 1998, industrial area, which occupied 50.5 ha has increased to 134 ha in 2000, 267 ha in 2008 and 301.50 ha in 2014. The major land use classes by industrial areas converted the plantation areas of agriculture. It is to be noted that because of this industrial development, agriculture area was reduced. There are about 36 major industries, 105 medium scale industries and 6000 small scale industries are located in Pondicherry (Pondicherry Census Department, 1991-2001).

Marshy Land & Plantation

Marshy land is the land where the water is at or near the surface and water stands for most part of the year. The vegetation here is permanently or periodically inundated by water. This category land occupies topographically low-lying areas. In the satellite imagery this category is seen in brownish tone. Marshy land occupied an area of 256.6 ha in 1998, 232.78 ha in 2000, 79.78 ha in 2008 and 79.78 ha in 2014. Marshy land drastically reduced from 1998 to 2014, wherein most of the land was converted to fallow lands (Fig 4). Plantation is described as an area under agricultural tree crops, which includes Coconut, Cashewnut, Arecanut, and other horticultural nurseries. Mostly Cashewnut and Banana plantation are seen here. The total area observed during 1998 was 243.6 ha and it has increased to 566.2 ha. Also, it reduced to 467.1 ha in 2014.

Suggestions

- It is necessary to take action to control urban sprawl.
- Settlement should be constructed according to CRZ rules.
- Alternative livelihood option in terms of diversification, choices as well as supplementary income should be explored based on clear needs and feasibility assessment.
- The adverse impact of human activities needed to be curbed with proper policy measures ensuring sustainable use of natural resources and providing adequate conservation of sensitive and threatened ecosystem.

Conclusion

In Pondicherry, the major changes in land use inferred from the differences periods from 1998 to 2014, clearly reveals the extent of land use changes, its causes and consequences. The major change is the conversion of paddy fields to houses, factories and other built-up areas. Furthermore, the ssettlements have increased due to conversion of agricultural lands, fallow lands, mud and barren lands. The rapid increase in population slows down the growth of per capita income of Pondicherry and thereby the standard of living of the people gets affected to a large extent. This becomes a serious problem with regard to population growth, which outstrips the growth product. The main reason for conversion of agriculture activity to other activity is due to poor income from agriculture lands. Hence, the people migrate to work as laborers in industries. This in turn leads to deterioration in the availability of land and future growth of population, which would further worsen the land situation. Moreover, this will have alarming consequences on agricultural production. The overy crowding will mainly affect the productivity of land, wherein the agricultural income may decline and cause environmental damages. This in turn will affect the well-being of people, especially the poor. The other modes of income generation like aaquaculture, which has a better scope and should be constantly encouraged to protect other fields. The qualitative and quantitative aspects of the biophysical resources should be taken into account when introducing a new land use pattern in the area. The positive impact of aquaculture in the study area due to shrimp farming has considerably increased the land value. Before the commencement of shrimp farming, the land value in Pondicherry district was only about Rs.18, 000 to 20,000/- per ha. which has increased to about 1.8 lakh/ ha (10 times). Further, there were no major changes in the effort and in the annual fish landings during the study period, compared to periods before the commencement of intense farming activity. Employment opportunity has also increased due to aquaculture farming activity. Thus, aqua farming activity in this district seems to be a beneficial one.

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Sexual Victimization of Women Police and Its Deleterious Impact on the Victims: A Thematic View

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Abstract

Sexual victimization of women prevails as a common phenomenon across the globe. It is neither limited to a specific place nor a particular profession. The police department is often represented as law enforcement agency, wherein it owes the responsibility to prevent crimes and maintain peace and harmony in society. The public point of view towards this profession is like 'Police profession is powerful'. However, in reality, the police do face many sufferings during the course in their profession. Among all problems, one issue addressed in this chapter is 'sexual victimizations of women police'. The reason being sexual victimization can destructively affect the victim's lifestyle, disturb the job efficiency and develop detachment from the workplace, which is more so in the case of women police. Hence, the present research chapter intends to understand the holistic aspects of sexual harassment of women police and its deleterious impact through thematic method of representation.

Keywords: Victims, Sexual victimization, Harassment, Impact, Women Police.

Introduction

History teaches us that numerous optimists' persistent efforts have paved way to women's educational, economic and social achievements. Nonetheless, still the risk of women's safety and security is on increasing trend. Violence against women is omnipresent. Ages have witnessed frequent victimization of women through different forms of crimes. Among those, sexual harassment at the workplace is not an uncommon victimization of women. Sexual harassment of women exists irrespective of their profession (Mahalawat & Rufus, 2017). Moreover, the researchers have concerned that 'even women employees in the police department

are not safe (Manickavasagam, 2016). Hence, it is a real need for the social scientists who are closely working in police related areas to examine the reality of women police safety at their profession. The police, irrespective of gender are considered to be very powerful by layman. However, women from this profession have also been witnessing sexual harassments, which are being reported sporadically. They face various forms of harassment like lewd comments, nasty body shaming, asked or forced by someone for sexual favors and being promised for some benefits (promotion, job ease, etc.). These harassments can deleteriously impact on the victim's personal/family, professional and social life. A study conducted by Burke and Mikkelsen have expressed that discrimination, sexual harassment, and inequality are the significant barriers for female police officers who seek to encounter the customary law, enforcement policies, and procedures. They also admitted that there is inadequacy of researches in such experiences of police women (Burke & Mikkelsen, 2005). Interestingly, Hassell, Archbold & Stichman in 2011 documented on female police officers who were continuously propositioned for sexual favors complained about their victimization. More likely, the policewomen had been victimized through sexist jokes, pornography, ridicule, and rumors. They further argued that 'sexual harassment, as a kind of discrimination, is still used to obstruct women's full integration into the police force. A study conducted by Brown et al. indicated that negative occupational culture in police are related with high prevalence of harassing incidences and discriminatory experiences of women Police (Brown et al. 2019). Moreover, in analyzing the pattern of women's contribution to Police Department Commonwealth Human Rights Initiative (CHRI) in an article, mentioned that the strength of women police in India was only 7.28 percent of the total police during the year 2017. Out of this minor women strength in police, 0.85 percent belongs to administrative ranks, 9.76 percent belongs to investigative ranks, and 89.37 percent belongs to the constabulary. These numbers are reflective of the exclusion of women in policing, especially at investigative and leadership levels. This exclusion extremely affects the quality of policing (www.humanrightsinitiative.org).

Literature Review

The brief review discussed below elucidates on the concept 'sexual harassment at workplaces', how the sexual harassments are discriminatory practices and a power-threat at workplaces through the use of previous research findings and what are major forms of sexual harassment at workplaces.

a) Sexual Harassment at Workplace: Pervasive, Discriminative & Power Threat

Sexual harassment is a recurring problem around the globe (Hejase, 2015). It is pervasive and an umbrella concept. In India, legally the Sexual harassment is defined as follows: 'sexual harassment includes any one or more of the following

unwelcome acts or behavior (whether directly or by implication) namely: i) physical contact and advances or ii) a demand or request for sexual favours or iii) making sexually coloured remarks or iv) showing pornography or v) any other unwelcome physical, verbal or non-verbal conduct of sexual nature' (The Sexual Harassment of Women at Workplace (Prevention, Prohibition & Redressal Act, 2013)).

Crosthwaite and Priest expressed the definition of sexual harassment, wherein they described harassment as a pervasive feature of the society that occurs in both public and private life. They further stated that harassment is different in the role it plays in social interactions and its phenomenology for the victims experiencing harassment (Crosthwaite & Priest, 1996). Also, Brown defines the discriminatory treatment in terms of limited job-related opportunities with limited access of women officers to higher rank & specialist roles and exposure to sexual harassment. Brown's survey conducted among British police forces confirmed widespread exposure to harassment and other discriminatory treatment forms (Brown, 1998). Yet another study conducted by Suresh, Sridhar and Kairanna in 2014 described the sexual harassment at organization as a form of destructive workplace communication that has damaging and devastating effects, wherein it deleteriously affects victims and organizations on the whole.

The continuing violence against women is an indication of gender discriminatory behaviors indoctrinated in the society. Moreover, the harassment may take the form of words, gestures or actions, which tend to annoy, alarm, abuse, demean, intimidate, belittle, humiliate or embarrass another or create an intimidating, hostile or offensive work environment (Unnikrishnan et al. 2010). This is supported by the study conducted by Steinporsdottir and Petursdottir among Icelandic police force in which they have concluded that incidences both bullying and sexual harassment are more frequent against women police by the male perpetrators. Accordingly, perpetrating of these incidences are the conscious or unconscious methods of maintaining the gender hierarchy in the police force (Steinporsdottir & Petursdottir, 2018). Also, a research article on 'Sexual Harassment, Workplace Authority, and the Paradox of Power' that relates power and harassment identified that women at power are more likely to experience harassing incidences, particularly in male-dominated work settings. Popular characterizations portray male supervisors harassing female subordinates; Contradictory to it, the power-threat theories suppose that women in authority may be more frequent targets of harassment (Mclaughlin, Uggen & Blackstone, 2012).

These aforementioned research findings have strongly indicated us with a message that even working women in the police departments have the proximity of getting victimized irrespective of administrative position they hold.

b) Types of Sexual Harassment

EEOC's (The U.S. Equal Employment Opportunity Commission) 'Policy Guidance on Current Issues of Sexual Harassment' mentioned that there are two major types of Sexual harassment (www.eeoc.gov/laws/guidance). These are pervasive forms of harassment existing in one or the other form. The nature and extent of harassment may vary from one place or profession to another.
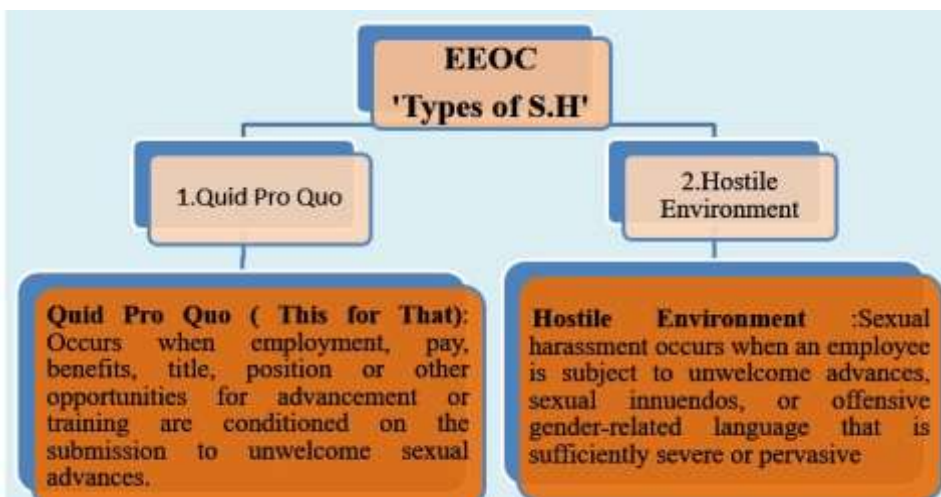

Fig.1: Two Major Types of Sexual Harassments at Workplaces

Haas, Timmerman and Hoing in their research on sexual harassment among Dutch police officers have pointed out that 'sexual harassment prevails in the police force' as like as in many male-dominated organizations. They also cited that 77percent of police officers from thirty-five countries have experienced sexual harassment from colleagues. They asserted that three forms of sexual harassment exist in the workplace. Firstly, gender harassment -nonsexual; Secondly, unwanted sexual attention, uninvited sexual comments or gestures; and thirdly, sexual coercion, which involves work-related intimidation or rewards used to attain sex (Haas, Timmerman & Hoing, 2009). In USA, the results of a mixed-method approach study entitled 'Sexual Harassment in Law Enforcement: Incidence, Impact, and Perception' found that most respondents experienced sexually harassment-behaviors. The incidences reported were very few, but retaliation was frequent and often severe. Regression analyses demonstrated that harassment negatively affected the victim's personal and professional life. However, the narrative responses revealed that respondents did not typically appraise them negatively (Lonsway, Paynich & Hall, 2013). Thus, the researchers identified more forms of sexual harassment of women police. It is important to note that among them the most common are sexual joking and sexual remarks (Somvadee & Morash, 2008), advanced by sexual favours (Bhat & Deshpande, 2017), sexism, skewed physical

fitness criticism (Muhlhausen, 2019), bullying (Collin, 2004; Steinporsdottir & Petursdottir, 2018), forcing to quid-pro-quo, sexually coloured humours, name-calling, etc.

Objectives

- ➢ To understand the nature and possibility of reasons, which are directly or indirectly responsible for sexual harassment of police women in their profession
- ➢ To analyze the ill-impacts of sexual harassment victims and understand the reasons for non-reporting of harassment victimization

Methodology

The present chapter uses thematic representation about the sexual harassment of women police and its deleterious impact on the victims through descriptive research design. The thematic based understanding on the related themes has been further theoretically analyzed and interpreted by the authors of the article.

a) Data Sources

The entire study is based on secondary sources, wherein data have been in accordance with objectives, which included research articles, news items, books, online sources, etc.

b) Limitations

i) The chapter is not very specific in Indian context; as limited research resources are available in this particular study theme.
ii) Though 'sexual harassment of women police' is the major theme of the chapter, but authors used few findings from studies of sexual harassment at other workplaces too, for better understanding deleterious impacts of the problem, non-reporting behavior of victims, etc.

Sexual Victimization of Women Police

It has been observed that scarcity of literature is there in this present theme related to women police. However, the available studies have proved its existence in the domain of police profession. Hence, study's thematic view included understanding the nature of sexual harassment, sharing of few incidences of sexual harassment, common causes connected with sexual harassment, reasons for non-reporting of victims of sexual harassment and deleterious effects or impact of sexual harassment on its victims with regard to women police. Furthermore, common studies on sexual

harassments have also been cited, the reason being it is inevitable to show the nature, causes and impact of sexual harassment at any workplaces.

a) Nature of Sexual Victimization of Women in Police Profession

It is understood through the related studies that a working woman who goes through the events of sexual victimization is extremely painful and utter annoyance to her physical, mental, career and social health. The similar deleterious effects happen with victims of sexual harassment, who are doing service in police profession. Also, a research study found that harassment at workplace has become a matter of great concern in all sectors of economy due to the fact that it showed various negative consequences. The women respondents from different workplaces like banks, educational institutions, hospitals, and shops were studied. Nearly, 50 percent of respondents got victimized within one year of joining their employment. The study also revealed that work experience and frequency of facing harassments were inversely related. The most common type of harassment faced was (67.4 percent) and this followed by physical (23.9 percent) in nature (Unnikrishnan et al. 2010). Also, while comparing harassment faced by women and men in law enforcement agencies of Florida, it has been found that women police experience a greater extent of sexual harassment and bullying than men. The evidences of increase in sexual harassment of female police officers made to believe that 'sexual harassment in policing is a national problem (Collin, 2004). Similarly, another survey conducted in Norway among 766 police officers in which females are provided significantly lower level of opportunities. Also, they faced discrimination and sexual victimization more than male officers (Burke & Mikkelsen, 2005).

Seklecki and Paynich in 2007 conducted a U.S. based survey among female police officers. The study found that 27.1percent of respondents reported experiences of sexual harassment. Victims experienced harassment incidences both by the citizens and their department staffs. Forms of harassment were: Insulations, name-calling as homosexuals by citizens, sexually explicit remarks, dirty jokes, etc. Some respondents accepted that sexually colored humor was prevailing within their department. A portion of participants expressed that they had no plans to leave the profession due to the prevalence of sexual harassment (Wilson, 2016). Yet another study conducted by Mahalawat and Rufus in 2017 on a sample size of one hundred women police in Jaipur, Rajasthan. The findings revealed that nearly 26 percent of women police have faced sexual harassment by both the male counter parts and society members during social interactions related to their profession. The study showed that mostly the harassers were from public. Also, verbal abuse by using dirty languages, threatening the women police, interference and dominance by political & local leaders', passing disrespectful comments such as women police are incapable of handling emergencies and attempts to offer a bribe to police in return asking for favors were some of the forms of harassment mentioned in the study.

A study conducted on female police officers in California by Brodeur identified that every law enforcement woman had experienced environmental harassment. Moreover, hostility has been commonly experienced than sexual harassment. The female police officers also reported that: 'gender-related jokes are part of the policing culture; and that female officers were negatively targeted because of their sex' (Brodeur, 2018). A report by Muhlhausen in 2019 regarding the status of researches on women in American policing revealed that many female police did not express that they experienced sexual harassment. However, women in police reported that specific behaviors experienced by them would really constitute harassment. They also reported about their experiences in connection with adverse or hostile environments, sexism, skewed physical fitness assessments, double standards, boys club and lack of support & opportunity during their career. An online survey by Brown, Gouseti and Fife-Shaw on police staff serving in England, Wales and Scotland found that majority of harassment incidences (around 75 percent) were associated with sexual banter apart from exposure to severe types of harassment (Brown, Gouseti & Fife-Schaw, 2017). Many studies revealed the existence of varied forms of harassment in different professions, including law enforcement agencies. Mainly, women are targets of sexual victimization at workplaces compared to their male co-workers.

b) Incidences of Sexual Victimization of Women Police

As per a news-item published in The Times of India (13 September 2016), 24 women cops have accused an inspector level officer in Delhi police have involved in sexual harassment at workplace. The allegation on him was that he had commented on female colleagues' clothes, and skin color. Interestingly, one-woman police constable has alleged of being harassed, ever since she rebuffed the man's overtures and complained against him to higher authorities. The accused had allegedly remarked on her attires, skin color and called her alone to his office. Also, reported that due to impact of his periodical harassment activities, she was so depressed and expressed to commit suicide. The complaints by remaining 23 women police personnel accused the same perpetrator mocking their skin color and gesture. The victims revealed that the accused boasted and threatened them for not making any complaint to higher officials. Victims also alleged that his subordinate was also involved with him. The victimization lasted for approximately four months, even after the inquiry was initiated (Bhattacharya, 2016).

Surprisingly, a finding indicated that 13 women from USA have sued their law enforcement agencies either for sexual harassment or kind of sexual discrimination. The information was about types of sex discrimination that women experienced in law enforcement. They faced ill-treatment stretching from generalized incivility to sexual-harassment. They became victims of sex discrimination, including being passed over for promotion, unfairly disciplined, and even termination. Particularly, four women of law enforcement have experienced forceful attempts to engage in

sexual activity. Some of them were physically threatened during both before and after filing a complaint. The highlights with regard to consequences of complaint are such as, when the victims raised their voice for justice and filed complaint, they faced retaliation, social isolation, negative job consequences and vandalism to their property. Also, faced even more severe behaviors such as death threats and failure to provide backup in emergencies, wherein the supervisors and coworkers behaved ambiguously, people have ignored the victims, false rumors or lies being spread and some people even refused to work with them. This attitude sometimes extended to family. Almost half of the women left agencies they had sued and most left law enforcement field entirely. On the whole, such experience negative workplace behaviors harmfully impacted on victims' psychological, physical and police professional well-being (Lonsway & Alipio, 2007). A study conducted by Flynn indicated that Philadelphia police department chief inspector one among the highest-ranking commanders in the department has been arrested and charged with allegation of sexual assaults of three subordinate officers. It has been reported that when two junior officers came to chief inspector seeking guidance, both women ended up being sexually assaulted by him. In the third case, the harasser invited a female officer to join his elite task force and after three days of her joining she was forcibly kissed, groped and digitally penetrated by him. It is after the female officers complained, they allegedly faced retaliation. The chief's arrest follows a long line of grievances from female officers, wherein two of the alleged victims have publicly accused him of his sexual assault in news articles and later he was suspended (Flynn, 2019).

The Tamil Nadu woman cop lodges sexual harassment against top officer – a news item in India Today has been published (22 August 2018). In an alleged complaint, a woman Superintendent of Police (SP) who had worked in Directorate of Vigilance and Anti-Corruption (DVAC) accused her senior officer who was in the rank of IGP of sexual harassment in her complaint. She had been subjected to sexual harassment for around seven months by the senior officer who allegedly tried to molest her. In August 2019, the case was transferred from Tamil Nadu to Telangana. The direction of transferring the case was based on woman officer's plea that the officer behind the harassment was influencing the Internal Complaints Committee (ICC). Later, after specific procedures, he was transferred to the Economic Offences Wing (Vasudevan, 2018). Another news article in The New Indian Express (9 January 2020) reported another incidence of women cop in the rank of constable claiming sexual harassment against seniors. This news has been posted in Lucknow and alleged harassment by her seniors, wherein she reported through video clips posted on social media regarding the same. She expressed sadness that "when she is not safe, how could she assure any other person's safety?" she added that when she is a victim and did not get justice, how can she help deliver justice for another person? The complaint was not registered until the video clips went on viral. After the video clip went on social media, the investigation got initiated.

c) Reasons behind the Occurrence of Sexual Harassment Incidences at Workplace

The Role Theory stresses on onset of normative expectations that are presumed to define particular positions or statuses in social structure and their corresponding roles or behaviors in interaction with others. The role theory may sometimes become a conflict and a source for initiating some form of harassments as some people cannot accept the role of women in household chores. They assume that women are captive of household works and males are supposed to move outside the home and earn. These conflicting negative attitudes of some people may serve as a cause of sexual harassment of women at their profession. Likewise, women police recruited at subordinate positions can be linked to the status conflict that directly or indirectly may lead to sexual victimization of them (Garcia, 2003). The sexual harassment expressed as a visible example that multitudes of workplace disputes and processes to resolve disputes. The individual, occupational and organizational-level variables all influence the origins of sexual harassment (Lach & Patricia, 1993)

The causes of harassment may occur at various levels. At the individual level, the personalities of the harasser and the harassed may be factors; At the dyadic level, when two people conflict; At the group level, where psycho-social dynamics is a factor; and finally at the organizational and societal levels, where it is a matter of culture and ideology (Hoel & Cooper, 2000; Lutgen-Sandvik, Namie & Namie, 2009; Bourgeois, Ohana & Renault, 2016).

Fig.2: Reasons Associated with Sexual Harassment of Women Police

Source: Compilation of Secondary Data

Organizational climate is a strong predictor of workplace sexual harassment. The two characters 'men outnumbering women' and 'hierarchical power dynamics' are absolute facts in police organizations at national and global levels. Thus, these characters can contribute to the prevalence of sexual harassment in police organizations, if appropriate preventive measures are not taken. Even the hierarchical power dynamics it is considered to be the root of sexual harassment (Science News, 2017).

Women in Indian police contribute only a meager (8.98 percent) portion (Press Information Bureau (PIB), 2020), wherein nearly 9 out of 10 women in the police force are at constabulary level (cnbctv18.com). Bhat and Deshpande 2017 mentioned the male-dominated organizational setup: the place where harassment occurs to show male folk domination. The inferior job position of women may serve sexual harassment as one mode asserting control over powerless and misperceptions about friendly nature of a woman. Women with higher academic profiles and lesser job opportunities are harassed and advanced by sexual favors by the person in charges; in return, they promise women certain benefits. This is supported by a study conducted by Barak focusing on online sexual harassment, which indicated that sexual harassment behavior occurs as a product of person and situation characteristics with substantial personal and organizational costs. Moreover, technology continues to provide new methods and venues for harassment such as cell phones, video games, the internet, untraceable message services (Barak, 2005).

d) Reasons for Non-Reporting of Sexual Harassment Victimizations

Johnson, Kirk and Keplinger in 2016 mentioned reasons for non-reporting of victimization are mainly due to: i) organizations act of trivializing it ii) reporting of victimization results in hostility and retaliation against the victims iii) another reason is the bystander effect, which says that we are less likely to help victims when others are present and iv) bystander effect occurs for two reasons: a) diffusion of responsibility (if others are present, someone feels that other people present are responsible for intervening) and b) social influence (bystanders observe others' behavior to determine the correct behavior; so if no one is intervening then that seems to be the correct behavior, as people abide by the status quo). Also, victims hesitate to objectively indicate about the harassing incident due to fear of adverse career consequences of losing the job and facing further ramifications (Shetty & Nithyashree, 2017; Vijayasiri, 2008; Brodeur, 2018). The threats to self-esteem, risk of secondary victimization, women fear facing doubts, scrutiny and victim-blaming. These fears are captured by stigma theory, which suggests that individuals will avoid sharing a stigma because of self-blame, shame, and fear of negative judgments from others. Moreover, societal stigmatization can also adversely affect the self-esteem of an individual (Keplinger et al. 2019; Choudhary & Rufus, 2019a).

The report of National Center for Women and Policing (NCWP) cited the sluggishness and inadequacy in handling sexual harassment complaints, lack of training of authorities to handle sexual harassment cases and chauvinistic social system followed by the police administrators were the reason for non-reporting or less reporting of sexual victimization by women police officers (Wilson, 2016). A case study of an elite military institution mentioned that the 'perception that nothing will happen' and the 'possibility of negative repercussions', including social ostracism and retaliation, were the reasons for preventing women from reporting harassing episodes (Pershing, 2003). Another workplace harassment study on student respondents reported their experience in the institution, wherein they indicated the reasons for non-reporting of the harassment were not knowing where to report it, fighting the problem themselves, wish of harassed not to report it and thinking reporting it will not make a difference (Jussen et al. 2019; Choudhary & Rufus, 2019a; Choudhary & Rufus, 2019b).

e) Deleterious Impacts of Sexual Victimization on Its victims

Sexual harassment of females in any profession or organization decreases organizational productivity and significantly produces deleterious impact to working women (Hassell, Archbold & Stichman, 2011). Especially, sexual harassment prevails in the law enforcement profession, where officials have long working hours and risk-taking tasks. In such situations, it will severely impact the health of individual victims and organizational cooperation. Furthermore, sexual victimization will surely reduce job satisfaction and will lead to detachment from the job, wherein sexual harassment as an issue that affects employee effectiveness. The harassment affects the victim, but it also affects fellow employees, the organizational management, and even the harasser, leading to less productiveness (Wright & Bean, 1993). Many studies had confirmed the existence of ill consequences of one or the other form of sexual harassment in different professions, including the law enforcement agencies. Also, a study pointed that some of the ill consequences faced by female victims of sexual abuse causing deleterious effects are cognitive deficits, asymmetrical stress responses, illnesses, persistent post-traumatic stress disorder, physical and sexual re-victimization, drug and alcohol abuse, and sometimes domestic violence (Trickett, Noll & Putnam, 2011).
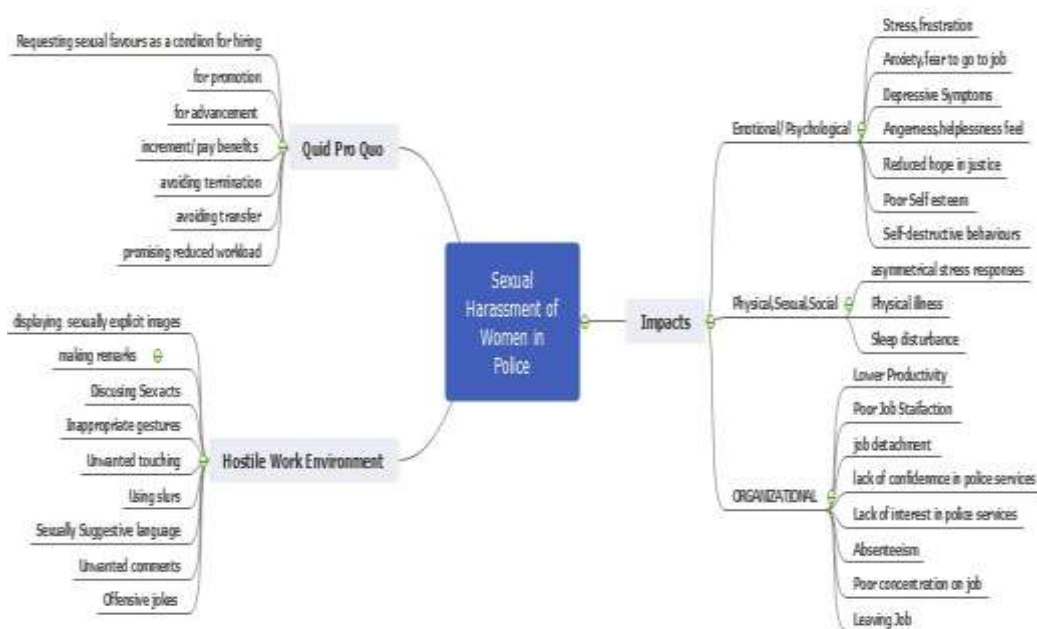
Fig. 3: Thematic View of Sexual Harassment of Women in Police and its Impact on Victims

Source: Compilation of Secondary Data

A self-administered anonymous survey conducted by Krimmel and Gormley among women law enforcement officers from New Jersey and Pennsylvania using job satisfaction scales found that job satisfaction levels were correlated with the proportion of women in their respective departments. Women who made less than 15 percent of their department experienced less job satisfaction. They experienced job-related depression and lower self-esteem than those women working in departments where the number of women outnumbers men. It is noteworthy to mention that literature conveyed that women are vulnerable to face sexual harassment, if their numbers are significantly less than male coworkers. This fact can be corroborated with the existing lesser strength and sub-ordinate position of women in police, specifically in India, and generally in the world (Krimmel & Gormley, 2003). Also, Friborg et al. in their study underlined the importance of investigating sexual harassment from clients or customers and sexual harassment by colleagues, supervisors, and subordinates. They also found employees harassed by colleagues, supervisors, or subordinates who had higher depressive symptoms than employees harassed by clients or customers (Friborg et al. 2017).

A study conducted on 4296 representative samples, including Dutch Policemen and Policewomen found that women were more bothered by sexual harassment than men. Also, victims who were bothered by harassing behaviors faced more health-

related problems than those who were unbothered (Haas, Timmerman & Hoing, 2009). A comparative study on 'The impact of sexual harassment on job satisfaction, turnover intentions, and absenteeism' from Pakistan and United States found that Pakistani employees who victims had greater job dissatisfaction and higher overall absenteeism than their U.S. counterparts (Merkin & Shah, 2014). Also, Gale et al. in their study among U.S. and Canada-based participants (4,459) from the Harvard Flight Attendant found that Depression, Sleep disturbances, fatigue, and musculoskeletal injuries were the adverse effects of workplace harassments (Gale et al. 2019). Another study by Vargas et al. examined incidences and Impacts of Sexual Harassment of Physicians and other Faculty at an Academic Medical Center. The study revealed that increased harassment experiences were independently associated with lower mental health, job satisfaction, a sense of safety at work, and increased turnover intentions, with no significant interactions by gender (Vargas et al. 2020). Another study entitled Sexual Harassment in Law Enforcement Incidence, Impact, and Perception found that general job stress, frustration, trauma outside of the workplace, were the ill effects of harassment (Lonsway, Paynich & Hall, 2013). Also, detachment from the job or quitting the job was another negative organizational effect (Doss, Mukherjee & Kumar, 2014). Generally, studies have opined that when women victims neglect the incidences of sexual victimization which may lead to future severe adverse impact of victimization (Choudhary & Rufus, 2019a; Herbenick et al. 2019; Choudhary & Rufus, 2019b).

Suggestions

The following suggestions are not limited to dealing with the issues of sexual harassment of women in police:

➤ A secret anonymous vigilant committee shall be framed to actively supervise every kind of harassment activity occurring at workplaces or in the police profession, even though systems like Internal Complaints Committee (ICC) is present. The committee should comprise of dedicated both male and female police officials.

➤ A separate women cell must be made for discussing every aspect of workplace threat to women safety. The complete anonymity of victim should be maintained and after a keen watch, necessary action should be recommended and taken if harassment persists.

➤ In India, the National Crime Records Bureau's report on 'Crime in India' may also receive such separate data of sexual harassment of women in CJS, include and publish under a column of crimes against police. Likewise, other countries shall follow this method for maintaining such reports.

➤ The conduct scientific researches on this subject by criminologists and other social scientist are the need of the hour to prevent sexual harassment of women

police. On the other hand, access of primary and secondary information for criminologists and social scientists related to police, prison and victims from government authorities should be made available for studies, which could highlight the situations and create enough awareness with regard to harassment for overall welfare of the society. Moreover, the co-operation of police heads is very much essential for such researches, provided the privacy and confidentiality of the participants to be ensured.

➢ Regular programs on gender sensitization should be given to police in all levels.
➢ Women in police should be encouraged to give voices against such sexual victimization that happens within and outside their workplaces.
➢ The punishment for disrupting the workplace environment by causing sexual harassment against women police should be made swift and strict in police profession in addition to legal punishments.

Conclusion

Sexual victimization especially harassment, with regard to women is pervasive. The available literature had confirmed various forms of harassment episodes persisting in different fields and professions. The present chapter is not meant to find out lacuna or blame the law enforcement agencies. Instead, the researchers carefully intend to figure out and conceptually emphasized on various harassments experienced by women police and at present at their workplaces. Also, indicated that existence of such harassment against women due to some perpetrators would result in devastating and deleterious impacts on the victims. Unfortunately, among other common reasons, women in police may avoid or struggle to open up their voices against them due to rigid hierarchical system and fear connected with that. Furthermore, the non-reporting of incidents due to various reasons poses a challenge and threat to workplace environment of women police. These harassing episodes have harmful and negative consequences in varied areas of victims' life. Apart from professional life, it destructively impacts on personal and social life of a victim. The sheer necessity of the moment is to understand the nature and magnitude of sexual victimization of women in police and also to ensure safety and utmost security in their workplaces.

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New Mindset of Entrepreneurs to Create a New Business World

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Abstract

This research article highlights the new entrepreneurship mindset concepts that an entrepreneur must adopt to move from the traditional business approach to the advanced business approach. The author of this article is an experienced global entrepreneur and the article originated from her own entrepreneur mindset with lots of new business approaches and real time implementations. The entrepreneurship is a fast-paced, constantly changing sphere – one where only the strongest entrepreneurs survive and grow. It takes a truly unique person to jump into this sphere, confident and determined with new mindset. It is a common thought about entrepreneurs that "Entrepreneurs are all different. They all have a different entrepreneur mindset that contributes to their success", in this research article there is description with explanation about new mindset of entrepreneurs which has the similar approach to grow together.

Keywords: New Entrepreneurial Mindset, Entrepreneurship, Young Entrepreneurs, Women Entrepreneurs and Global Entrepreneurs.

Introduction

As a means of getting the entrepreneurs prepared for current and future growth, they are encouraged to learn and start-up with new concepts and mindset of entrepreneurship that can aid them in acquiring the required skills and knowledge which will make them best fit into the global business market without much stress, especially with their own passionate skills. In this case, new mindset of entrepreneurship has been identified. Entrepreneurship is the most effective approach for continuous growth of any country. The entrepreneurial activities significantly affect the economy of an area by building the economic roadmap and providing jobs. Drucker in 1970 believed that what entrepreneurs have in common is not personality traits but a commitment to innovation. According to Aruwa, it is the ability of some people to accept risk and combine factors of production in order to produce goods and services. It can also be seen as the willingness and ability of an individual to seek out investment opportunities in an environment, and be able to

establish and run an enterprise successfully based on the identified opportunities (Aruwa, 2004).

The World Bank Report in 2012 prepared by Valerio, Parton and Robb argued that assessing entrepreneurial training programs needs to involve both an individual's competencies (entrepreneurial capabilities such as management skills and technical knowledge) and an individual's personal characteristics (an entrepreneurial mindset that includes traits such as resilience and creativity and social-emotional skills such as self-confidence and leadership). Fundamentally, entrepreneurs believe that change is possible, a view that is similar to Dweck's 'incremental mindset', the idea that core qualities can be developed (Dweck, 2012). Entrepreneurship is an individual's ability to turn ideas into action, which includes creativity, innovation and risk taking, as well as the ability to plan and manage projects in order to achieve objectives. This supports everyone in day-to-day life at home and in society, makes employees more aware of the context of their work and better able to seize opportunities and provides a foundation for entrepreneurs establishing a social or commercial activity (European Commission, 2005).

Interestingly, entrepreneurship is the implementation of an individual's talent in the resources in which he or she is available with; and expanding these resources in the future so that one can get individual as well as general i.e. social success. It comes from the French verb 'entreprendre' which means 'to undertake.' Entrepreneurship is the act and art of being an entrepreneur or one who undertakes innovations or introducing new things, finance and business acumen in an effort to transform innovations into economic goods. This may result in new organizations or be part of revitalizing mature organizations in response to a perceived opportunity (Haidar, 2012).Evidences from Universities in the developed countries showed that entrepreneurial education has the potential to transfer and communicate to students the skills, ability and knowledge necessary for them to be able to identify potential business opportunities (Moses & Mosunmola, 2014).

The benefits of an entrepreneurial mindset should not be confined to a few innovative risk-takers. Gergen and Vanourek in their book on 'Life Entrepreneurs: Ordinary People Creating Extraordinary Lives' indicates the important twist on entrepreneurial thinking. The entrepreneurial mindset is one that is awake to new opportunities, brings creative solutions to whatever opportunities are on the horizon, translates those opportunities into vision and then ultimately puts them into action (Gergen & Vanourek, 2009). These reviews indicate that these aforementioned aspects and characteristics are highly valuable in many professional paths more precisely in the case of entrepreneurs, wherein one lead teams and organizations.

Objective

To conceptually review and understand the new mindset of entrepreneurs towards creating global business development

Methodology

The entire research study is based on self-entrepreneurship experiences, open discussions with young women entrepreneurs and feedbacks during entrepreneurs' networking sessions and journal papers.

Mindset

We all have a fixed and changing behaviours, and it generates from our mindset blueprints and support us to create our results. As Money and You graduate (moneyandyou.com), the researcher learnt the concept behind the development process of mindset, wherein one can understand it through this figure indicated below:

Fig.1

Our mindset is the hidden mechanism that showcases us opportunities and ignites our real ambition, engaging our strengths in ways that enable us to exhibit and thrive.

Entrepreneurial Mindset

A mindset is derived by belief system, overall belief pattern, assumptions, experiences and knowledge that we use to process information, drive our decisions, and guide our behavior.

An entrepreneurial mindset is a unique set of beliefs, experiences, knowledge, and thinking processes that drives entrepreneurial behavior. An entrepreneurial mindset tends to:

- Believe in their own capability to create their future and influence by their own experiences, empowering themselves to take ownership of their lives.
- Possess persuasive goals that keep them complete-focused and naturally motivated, driving themselves to be self-directed, action-oriented, and highly engaged.

- Have an optimistic approach of risk events and see challenges as potential opportunities, become highly resilient, resourceful, and solution-oriented even within uncertain conditions, even in resourceless environment.
- Be lifelong knowledge gaining with a focus on new-experiments as learning opportunities to test new ideas, develop curiosity, creativity, and innovative thinking;
- Display a high-level of trust level, understanding that following through on easy solutions can lead to hidden opportunity.
- Have a clear vision, being other-focused and understanding that someone creates value by solving problems for others.
- Surround themselves with a focused community of positive influencers and critical problem solvers.

An entrepreneurial mindset can be developed and enhanced through real world entrepreneurial challenges and experiences. Also, to cultivate the entrepreneurial mindset, we must create entrepreneurial learning experiences within organizations, networks, and communities.

New Mindset of Entrepreneurs with New Methods of Entrepreneurship

New Mindset of Young Entrepreneurs

Excited for Well-Designed Future – in current time young entrepreneurs are more prepared and focused to create their well-designed future. Most of young entrepreneurs are starting their entrepreneurship journey with complete learning of start-ups according to their own passionate work.

Passion with Profit approach – Today's youngsters believe on their own passionate skills and prepare themselves to generate profit from their own passion. For doing that, they are always ready to learn from business mentors.

Innovative, Focused and Concentrate Mindset– exploring the new business ideas, asking the right questions, challenge accepting mindset with optimistic approach and being inquisitive or curious.

Clear Mindset with Long Term Vision and Mission – reinventing themselves on various situations (check, their goals are still the right one for them and adjust it if necessary) by being comfortable with ambiguity, uncertainty and variety. Moreover, the trusts to create short-term and long-term road map with clear mindset through creative experimentation. Also, young entrepreneurs believe that the failures are the process of finding success.

Solution Developers According to Current Need – looking outwards as well as inwards. Developing solution at various business problems and focusing on current need of business environment.

Leadership Approach Instead of Ruling Approach with Resources – young entrepreneurs are adopting people-focused behaviour instead of people-ruling behaviour by creating business ethics with social responsibility.

Focused on Image and Personality – they have clear mindset with their own strategies, values and aspirations. Moreover, their image and personality are the most powerful drivers of what they want to achieve. It also helps them to identify, understand and use them as growth fuel to drive their actions, maintain momentum and increase their chances of success.

Believe to Take and Try New Business Techniques – trying many new business techniques, like capital mechanism instead of market mechanism, crossing the local limits and trying for global market, increasing the business potential by using online platforms, B2B (business-to-business) approach, global network and connections, focusing on more effective and easy products.

Technology Focused Mindset – concentrating on new technologies in business. Searching and continuous learning mindset in area of advanced technology tools to apply it effectively in their ongoing business and for their future business plans.

New Mindset of Women Entrepreneurs

Women entrepreneurs have been recognized as major participants in the field of entrepreneurship. They have established themselves as 'womenpreneurs' or 'womenopreneurs' with new mindset of success and are playing a major role in business world by removing many out dated theories, old-fashioned ideas and obstacles. Moreover, they have created a valuable identity for them in this male dominated world. Womenpreneurs set a lesson and male competitors are now recognizing the capabilities of a successful female entrepreneur.

New Approach of Women Entrepreneurs with Collaborative Mindset

The collaborative mindset of womenpreneurs is supporting them to achieve their success in all desire fields. The researcher found most of women entrepreneurs with new mindset of support and collaboration with each other. Self-awareness and connect themselves with others accordingly, large scale of social media interaction, greater need to depend on each other for support have led to the growth of womenpreneurs communities. Womenpreneurs communities are formed at all levels from district to national and even international levels, to bring together ideas and innovation for better growth and development. Women entrepreneurs has the strong

new mindset that business people always ready to accept the collaborations and learn from each other to establish a stronger business enterprise, better opportunities, more growth, and profits.

Determined Mindset and Stay Focused on the Mission

Women entrepreneurs are always strong goal achievers. The mission that they fix in their mind they determined to complete it. Collaborate with people who have a common mission and common ideas. It makes the easier path for them to achieve their set goals and there are better chances of the partnerships succeeding. Also, having a clear vision and mission lead them back to the right path when distractions and other opportunities attempt to lead them away. They have a strong mindset of "If you are good at what you do, then there will be many doors that will open and many opportunities you will receive".

Entrepreneurship with other Responsibilities

Many women entrepreneurs are using many advance technologies to achieve their goals and complete their mission. They are working from home with their other responsibilities by using video conferencing as the primary communication method, online business techniques, e-commerce business tools and many more new business tools.

Developed Mindset to Drop all Fears

Fear of failure can be a debilitating factor in women's life and performance as a women entrepreneur. Women accepted this fact and developed their mindset to handle their fear face to face and defeat it. Also, to draw themselves out of the comfort zone and take challenges, take risks and go after success. The new mindset of womenpreneurs is coming out of the comfort zone and working wisely with confidence, which is best way to create new opportunities and to overcome fear of failure.

Established New Innovative Business Tools

Women entrepreneurs developed new innovative tools of business which are supporting to communities. They converted their passion into profit. They choose their passion as their earning tool. Many types of cultural, professional and social activities came up through women entrepreneurs.

New Mindset of Global Entrepreneurs

Global entrepreneurs require thinking and acting globally from inception. The researcher summarizes the principles of global entrepreneurship mindset and

retraces the entrepreneurial journey as a global woman entrepreneur. It is a greater appreciation that how early and rapid globalization can increase the chances of success. Beyond knowledge acquisition and strategic development, a key element of this journey was a changing mindset that was necessary to fully embrace the global approach. Most entrepreneurs are comfortable to start their business to address the needs of a local market. Their common mindset is that they can fine-tune their market offers, planning and internal operating systems according to local needs. Foreign expansion occurs only once the company is sufficiently large and mature and has learned how to serve the needs of the local market. Global entrepreneurs changed the mindset, they allowed themselves to define and act on global opportunities at an early stage in their company's life cycle. Their mindset is focused on global approach. This is based on entrepreneur's own gradual change in mindset, which began with lessons from self-entrepreneurial experience even before status-quo as global woman entrepreneur. According to researcher, the new mindset of entrepreneurs to become the global entrepreneurs is based on following points:

Install a Global Mindset throughout the Company from Starting Point

Focus on global opportunities from the beginning, 'local' is a small part of 'global'. Initiate a strong discussion and planning of global opportunities with local opportunities. Ideally, a global mindset should drive the enterprise from the start, including all of the founders and employees. Without a global mindset, it is tough for any organization to serve foreign clients and foreign sources. The researcher as a woman entrepreneur commenced the entrepreneurship journey in 2009, wherein it was very clear with all global business strategies for long-term goals, which is currently getting achieved.

Create International Network and Connections

A global business mindset requires a global network of connections can be leveraged to find customers, clients and partners. In that case, many immigrants to a country have a significant advantage over domestic entrepreneurs who have rare international experience, knowledge, or connections. It is important to overlook at different possible groups. For instance, new immigrants, foreign chambers of commerce, other officials from foreign embassies, universities, international associations, global business clubs, international referral groups, etc. They become critically important during the start-up phase of any company to reach globally. Similarly, hiring employees with international experience can provide advantage and exposure. Moreover, the New mindsets of global entrepreneurs needs to overview their current global networks and create a strategy to form new networks to pursue a series of global opportunities. As part of researcher's internationalization planning, the global network of skilled women, passionate entrepreneurs and potential customers have been created. Furthermore, through creation of Grace Ladies Global Club, on one side a huge network of ladies and

worked effectively on womenpreneur strategy have been roped in. Interestingly, at the other end the entrepreneur connected with many international organizations and global clubs to build the global market for the company's products and services.

Optimistic Mindset to Face any Challenge or Situation

Most of global entrepreneurs get their growth with optimistic mindset. The optimistic mindset can be an asset to an entrepreneur but it can also be the reason of failure because it can lead the entrepreneur to create a wrong direction of business that cannot succeed. Moreover, huge aspirations propel the entrepreneur to try a large global business too soon. The right strategy is to go further with a planned global business structure or roadmap. For any company, the problem must be clear and well defined and try to find out a clear solution – ideally with a quantifiable return on investment for customers who pay for your solution. With this same mindset, the researcher and her team are continually working to define and refine the problems that we solve for our customers and clients.

Advance Market Strategy for Foreign Customers & Clients

A minimum viable product or service is an offer that generates revenue for the company and that motivates customers to provide feedback and recommend it to other potential customers (Moogk, 2012).

Many entrepreneurs tend to spend too much time to create, modify, and enhance a product or service before it is ever seen by a customer. A global entrepreneur should use the minimum viable product to leverage each foreign customer to earn money, receive customer's feedback on what changes or modifications are required according to their experience and ask customers for referrals. The researcher has studied and applied the principles of referral selling because it is one of the most accepted sales strategies for best global approach.

Leverage the Assets of Well-established Networking Organizations

Leverage the assets of established organizations with global operations to gain access of foreign customers and clients. These assets include technology platforms, internet forums, brands and open source communities. Large scale global business platforms always have a huge global users, developers and partners. The reason being they are localized with many different languages. Also, the open source software provides important infrastructure capabilities such as e-commerce, localization and give access to diverse, active and global communities of users.

Develop a Global Business Model

New mindset of global entrepreneurs is much more than an export strategy, they believe to develop a business model where they acquire and sell products and services in different geographies. Furthermore, the new possibilities include software-as-a-service (SaaS), infrastructure-as-a service (IaaS), platform-as-a-service (PaaS) or backend-as-a-service (BaaS). This is experimented with the researcher's Singapore based company named Professional Skill Development Hub (PSD-HUB), wherein it has been decided at the beginning of start-up, that it would make the business model base on a cloud-based software-as-a-service. Also, Software-as-a service business model fit our global aspirations.

Innovation of New Techniques in Entrepreneurship

Gain Guidance Approach to get Success

The starting or owning a business can be stressful, frustrating and even maddening. Many entrepreneurs are not able to do masters of business (educational degree) or any family business backgrounds. Hence, in that case entrepreneurs are using the new technique of learning from certified experienced mentors or coaches. They choose someone who can guide them to deal with obstacles, offer a different perspective, solutions and be the person to keep their ego in control. They just find one who understands them and create a balanced mentor-mentee relationship.

Global Leadership Learning

Perhaps not surprisingly, leadership is also one of the major areas, wherein entrepreneurs excelled. Entrepreneurs are applying global leadership technique to spread their business globally. They are trying global leadership to gain the attention during networking and international gatherings.

Goal Orientation

Goal orientation is defined as energetically focusing efforts to achieve a goal, mission, or objective which closely paired-up with leadership, as it is described above. It is another new technique of success for entrepreneurial-minded people. Most of the entrepreneurs generally agreed upon: "I am known for overcoming significant obstacles to achieve my goals," or "I am most productive when working closely with others and support them to achieve their goals". It is quite important for entrepreneurs to have a strong sense of what their goals are because their product or service depends on it.

Develop Advance and Professional Communication Style

The final identifying technique of entrepreneurship is a mastery of interpersonal skills, whereas the glue that holds the other skills together. It includes effective communication, building rapport, relating well to all people from different backgrounds and various communication styles. The new mindset says, without interpersonal skills, an entrepreneur would be limited to relating only to those who share their exact communication style and finally restricting their ability to convey their vision and mission.

Advance Learning of Money Relationship

Money relationship is a new innovative learning by entrepreneurs that are shifting them from their negative, damaging thoughts into a positive wealth creating mindset and give them the money management habits with positivity. It creates "Money Moves" for them to take risks.

Online Business Approaches& Trends

Search Engine Optimization (SEO)

SEO is the process of making a site more visible in search engines, so it provides more traffic from people searching for the products or services we offer. It is an effective online tool, which entrepreneurs are using on priority.

Conversion Optimization

Most of these strategies aim to get more people on any business website. The conversion optimization helps to entrepreneurs to ensure them to get more value out of each and every visitor by maximizing their rate of conversion.

Social Media Marketing

Social media marketing has a significant potential in building and nurturing a social media audience. Hence, entrepreneurs are using it effectively in their new business strategies.

Email Campaign

The email campaign is a sequence of marketing efforts that contacts multiple recipients at once. Email campaigns are designed to reach out to subscribers at the best time and provide valuable content and relevant offers. It is the new style of email marketing, which has an astounding potential for ROI because it costs almost nothing to execute. Start collecting subscribers from the existing customer base,

social media followers and other new connections. For instance, even a simple content newsletter encourages repeat traffic to any business site, facilitate more engagement with business brand and keep that brand top-of-mind with audience.

Suggestions

The support extended to entrepreneurs is directly strengthening the backbone of economic development of any nation. This in turn provides jobs and new products or services that impact on many people's life. Moreover, the new mindset of a successful entrepreneur needs outside-the-box thinking to create a new business world. Anyone can start with a passion, but develop a successful business is the major challenge. The new entrepreneurial mindset should always be unique, creative, balanced, communicative and highly motivated to succeed. In furtherance, the learning of new and advance entrepreneurial mindset concepts and keys supports to get early success and facilitate to build a thriving business. Having the new success mindset as an entrepreneur will enable you to deal more effectively your business. After knowing all new and advance concepts you will be able to think and react like a true entrepreneur. It is to be noted that once you become more confident with new success mindset, you can move further with a planned roadmap. According to this research study and experiential learning, some of the following suggestions can support the entrepreneur to initiate and run a successful business model with new mindset:

➢ **Find out your real passion to initiate your business**

Many entrepreneurs start their entrepreneurship journey to see the market trends or what others are doing in their business. In that case, they forget about their own passionate skill with their own positive mindset. It is quite important to understand that an entrepreneur cannot remove passion from success process. Hence, it is suggested to create a clear mindset to find out real passion through which you can convert into profit anytime.

➢ **You need only your own approval to become an entrepreneur**

The common process to live a life is to learn and apply it by you. It is since one's childhood they have learnt many things from surroundings, created blueprints in the minds and applied it in their lives. The same process has to be applied to become an entrepreneur. Most important is self-approval to initiate business of your choice.

➢ **Develop new mindset to draw your own future with strong believe and planned roadmap**

The new mindset has to draw a future roadmap with strong belief that it should be a prior process for any entrepreneur. It is something like a ladder to climb at your

highest business peak successful, wherein the new mindset of entrepreneur is to be focused and determined. However, in case you believe you can get better and do other things, whereas growth mindset will enable you to accomplish more.

➢ Walk three steps further, think all possibilities

According to current time and need, you always have to think three steps further action and looking at all possible opportunities for better gain. Ask yourself, "What is happening right now?" and "What will happen three steps further from the action which I am taking today?"

➢ Fix an incredible vision and mission for your business

Clear vision always gives you strength to grow with big achievements. Fix mindset with clear vision and mission supports you to cross through all obstacles positively. "You don't climb straight from nothing to something big. You hit an obstacle, climb over it and reach the next level of the plateau. You cross the line again, cross another obstacle and climb to the next level again. The more you do that, the more you will look back and realize how far you've come. It is all about overcoming each obstacle as it hits, and not giving up." Brian Smith, Founder of UGG Boots.

Conclusion

Entrepreneurship is an ever-changing research field. Entrepreneurship is essential for rapid and sustained economic growth and development of any nation. The chapter summarizes the new mindset of entrepreneurs to create a new business world, wherein the research focused on new and most used techniques and knowledge in business, tools of motivation, attention and new technologies. Also, the ideas to create a successful business model, identity and emotions in the entrepreneurial process. Also, the chapter showcased the complete understanding of new mindset of young entrepreneurs, women entrepreneurs, global entrepreneurs and innovation of new techniques of entrepreneurship by entrepreneurs. Thus, developing a 'New Entrepreneurial Mindset' which is very much indispensable for success and future growth of any entrepreneur in today's context. Hence, the understanding of new mindset of an entrepreneur is drawn to new opportunities and challenges, quick solution finder in difficulties, always prepare to take great risks, welcoming changes, take the actions persistently, pursue new initiatives, focusing on global market and seeing the big business model.

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Workplace Issues and Challenges of Women Employees

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Abstract

Women employees are facing more challenges in their day-to-day life. Hence, to maintain their work-life balance, they are crossing many hurdles, wherein workplace issues has been one of the major challenges faced by every women employee in the world. The reason being much harassment is occurring against the women employees in all employment sectors. Even though there are more legal remedies and statutory labour welfare measures to protect women in the workplace. The foremost issues of working women globally are career progression, pay parity, harassment, child rearing and work-life balance. Hence, there is a sheer necessity to understand the aforementioned issues. The present chapter intended to analyze the workplace issues of working women as an outcome of a program conducted on legal awareness for students and working women. In furtherance, the researcher has used the data sources from the project sponsored by NCW (National Commission for Women), wherein in both gender were taken as respondents. The study included 148 respondents out of which there are working women and students from both the genders and analysed in two dimensions, one is from the perspective of working women about workplace issues and other from students' perspective to understand awareness level on workplace issues of women employees. The results showed that working women respondents have strongly agreed that workplace harassments and conflict of work-life balance are stronger issues than other challenges like shift-system, long working hours and gender discrimination. Also, the students (both male and female) revealed that awareness level of male students regarding workplace issues is good and opined that conflict in work-life balance and work doing night shift are predominant issues of working women and awareness of female students indicated that sexual harassment and child rearing are the major hurdles in their career progress.

Keywords: Workplace Issues, Work-Life Balance, Gender Discrimination, Work-Family Conflict, Workplace Harassment.

Introduction

Women are backbone to a progressive society and developing nation. The percentage of women in employment is 47 percent and it is equal to their male counterparts in a country like India. However, when compared with global women employability, India had lower percentage of women workforce than other countries (World Bank, 2019) and also it is found that employability rate is equal to men but their participation in work is just 23 percent (India Skill Report, 2020). There is an upward trend in employability of Women but certain factors deter their career path. The workplace issues against woman employees are one of the critical areas, which should be concentrated by every organization as well as Government. The result of many studies about women and workplace issues indicated that gender discrimination, sexual harassment, work-life balance, biased activities, maternity leave and creche availability are major factors. The factors like low salary, job insecurity, shift work, lack of legal protection and poor working conditions are also the workplace issues faced by working women (Rajesh & Manoj, 2016).Moreover, financial demands, cost of living and children education expenses force women to engage in a career. It is because of these demands; women are ready to work on long working hours, night shift even for less pay. Thus, running the family with happiness and successfully completing work burdens every working woman. Women are socially, economically and mentally facing many challenges to maintain the balance between their work and family. Various research studies examine the Women employees' challenges and issues in workplace, which are playing a vital role in affecting her mental health, career development and work-life balance. Keeping these aforementioned aspects in view, this chapter focuses on analysing the workplace issues of working woman and also reviews the awareness level of college students about the issues and challenges faced by women employees in their workplace.

Related Literature

Indian society supports male dominance in all major, important and challenging tasks whereas women are considered to be weak and only capable of bearing lesser work pressure at the workplace. The potential and capabilities of Indian women have always been underestimated in regard of their recruitments, salary issues and promotions. In many families, even if woman is working, her salary is given to her husband, father-in-law or elder member of the family and in doing so her independence is on the superficial level. Though woman is working, still she has to depend on somebody (Gandhi, 2014). The sexual harassments reports showed that some women do not report when it happens. Furthermore, gender discrimination at workplace has been seen in all public as well as private organizations which will create negative impact on employer. It increases the mental stress level among worker. The gender biases begin to take place at a very early stage for more Indian women. It is very difficult to accept the fact that women are also capable of working

shoulder to shoulder with men (Channar, Abbasi & Ujan, 2011). This is supported by a study conducted by Amol and Kumar, wherein it has been observed that women who are working in male-dominated fields experience gendered barriers that not only impede their success, but also make it difficult to combating equality within the workplace (Amol & Kumar, 2017). This is because women are suppressed and discriminated both at workplaces and at their homes. Moreover, they are not able to give quality time to their family and hence face hurdles to maintain a balance between work life and family. This is proved by a study conducted by Jayita and Murali on working mother, which confers a woman has the responsibility of raising a child, so it necessitates her to take more than available leave options, and job security can be at risk. The significant social and personal adjustments are necessary to cope with such a situation. A working mother, especially one who has the good fortune to be able to balance her home and work enjoys the stimulation that a job or career provides. She develops the ability of raising a useful member of society and at the same time gains financial independence (Jayita & Murali, 2009).Yet another research study analysed the challenges faced by working women at workplace, family and society in this they examine issues, impacts and remedial measures of workplaces of working women. The results indicated environmental effect and social cultural effect of women employees are enhancing the challenges of working women. Also, it suggested that by giving the three 'S', 'Strength, Safety & Security' it will reduce their challenges (Mittal, Sharma & Srivastava, 2015).

Objectives

➢ To analyze the workplace challenges of women employees indifferent sectors
➢ To review the awareness level respondents about workplace issues of women

Methodology

The entire sample respondents have been taken from participants of legal awareness programme sponsored by National Commission for Women (NCW) through convenient random sampling, wherein 148 samples are included in this study. The primary data has been collected through a structured questionnaire among 26 working women belonging to different employment sectors and 122 students from various colleges, which included 55 males and 67 females. The study adopted descriptive research design and survey method. The secondary data are collected from various online sources. The data are analyzed using simple percentages and interpreted accordingly.

Results & Discussion

The results are discussed based on objectives to understand workplace issues and level of awareness about challenges. It includes demographic factors, level of

awareness on what is happening in work place and perception of respondents on challenges of women at work environment.

The demographic factors are represented in cross tabulation and workplace challenges variables are calculated using simple percentage analysis based on objectives.

Demographic Factors

The demographic factors included in the study are Gender, Qualification and experience.

Table 1: Demographic Factors

Particulars	Categories	No of Respondents	Total
Group	Student - Male	55	148
	Student - Female	67	
	Working women	26	
Gender Distribution	Male	55	148
	Female	93	
Qualification	Undergraduate (UG)	115	148
	Postgraduate (PG)	33	
Experience	Below 3 years	3	26
	3-6 years	18	
	6-10 years	5	
	Above 10 years	-	

The above table shows the general information about the respondents of the study. There are 55 male students, 67 female students and 26 women working women who participated in this survey. The qualification indicates that there are115 samples from undergraduate stream and 33 respondents were pursuing post graduation. In the experience category,3 of the working women were with below 3 years working experience,18 respondents have 3-6 years working experience and 5 from the 6-10 years category.

Level of Awareness

The awareness level on workplace issues of women employees was assessed by variables like nature of workplace issues, sharing workplace issues with family, awareness on legal remedies and availability of grievance committee in the organization. The factors given indicate to what extent the students are aware about the situation in work place and how they can be tackled. As far as the working women are concerned, they are experienced and can help to bring out the real issues

and by giving their opinion on factors like whether they share their experience with family members, awareness on legal remedies and presence of Grievance can help to formulate strategies.

Table 2: Awareness Level on Workplace Issues of Women Employees

Statements	Responses	Working Women (%)	Male Students (%)	Female Students (%)
Nature of workplace issues	Yes	82	72	78
	No	18	28	22
Share workplace issues with family	Yes	62	38	48
	No	38	62	52
Aware of legal remedies	Yes	79	80	87
	No	21	20	13
Grievance cell / committee in organization	Yes	42	53	51
	No	58	47	49

The above table shows the awareness on nature of workplace issues by the working women, male students and female students. It shows that their awareness level is high on workplace issues. Both male and female students stated that less percentage of women are sharing their workplace issues with their family. Moreover, the entire three groups specify that they are aware of legal remedies and awareness on availability of grievance cell is quite low.

Perception of Respondents towards Workplace Issues of Women

Table 3 revealed that most of the respondents could perceive the workplace issues of women employees. The male student's perception indicated conflict in work-life balance (95 percent) and work in night-shifts (93 percent) are predominant issues than other challenges. The female student's perception shows sexual harassment (97 percent) and child rearing (90 percent) are important issues than other challenges. Also, the perception of working women shows work-life balance (92 percent) and sexual harassment (88 percent) are the most affecting issues.

Table 3: Perception of Male Students, Female Students and Working Women towards Workplace Issues of Women

Statements	Male Student Percentage (%)	Female Student Percentage (%)	Working Women Percentage (%)
Biased Treatment	64	78	69
Male Domination at Workplace	51	88	62
Conflict In Work-Life Balance	95	89	92
Gender Bias Discrimination in Promoting	82	82	58
Target Completion Time	73	79	73
Long Working Hours	55	67	62
Sexual Harassment	91	97	88
Child Rearing	87	90	85
Work Pressure	82	87	73
Work in Night-Shift	93	84	65

The following points portray the consolidated view of result analysis:

1. The demographic variables of the respondents in gender wise distribution showed that there are 55 male respondents and 93 female respondents which include 26 working women. Also, 115 are undergraduates and 33 respondents with post graduate qualification.
2. Among the three groups of respondents, majority of the respondents are aware about the workplace issues of women employees.
3. It has been observed that male students' point of view indicated that conflict in work life balance and working on night shift are the top issues for women employees. On the other hand the perception of the female student shows that sexual harassment and child rearing are the predominant challenges of women employees. The result of working women indicates that the work life balance and sexual harassment are the main issues faced by every women employee in their work place.

The results have showed perception of male students, female students and working women towards workplace issues of women employees. The variables like biased treatment of women employees, male domination at workplace, conflict in work-life balance, child rearing, sexual harassment, working hours and shift timings are included. Moreover, from the issues listed, the student respondents responded based

on hearsay perceptions and working women have shared their real time experiences at workplaces.

Even though there are several measures taken by government towards curtailing such discriminative practices but, in reality women are the sufferers. However, still women hit the glass ceiling to prove them and occupy deserving positions in their career. Furthermore, in order to understand whether both gender of students could perceive issues that affect women employees the study focused on important aspects at their workplaces. Also, it is known from the global reports that work life balance, gender bias in promotion and pay, harassment and child rearing are viewed as vital issues that hampers women's career progression. Thus, it is quite evidential that non-inclusive workplace issues do exist, wherein women are often denied of equal opportunities and have not fully recognized their efforts. This in turn leads to failure of achieving the overall vision of many organizations.

Suggestions

➢ Family-friendly policies can be introduced into company's framework to help them in balancing their work and life.
➢ The career progression of women to be taken care in terms of payment and promotions so that any kind of discrimination shall be avoided.
➢ The night shift employees to have good working environment ensuring better health and safety.
➢ Workplace flexibility might be given like, paid family leave, child care allowances, timing of work, etc.
➢ Gender neutral policies needs to be introduced to re-orient workplace culture.
➢ A special committee to monitor gender bias in terms of pay and promotion of women employees and enforce workplaces strictly towards safe working environment.

Conclusion

This research chapter has addressed on the issues and challenges of working women and awareness level of all respondents. The results revealed that sexual harassment and conflict in work-life balance are dominant factors than other issues like child rearing, gender discrimination, long working hours etc. The suggestion is to add knowledge, promote right skills and enhance positive attitude towards boosting self-confidence level to overcome the challenges in workplace. Moreover, the counselling to women employees and various programs may be conducted for creating legal awareness about women rights, which will help every woman to break invisible glass ceiling at workplace.

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Conceptual Study of Techno-Stress on Women in Non-IT Sector

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Abstract

Over past few months, teaching and technology experienced a special bond owning to the Covid-19 induced new normal. The use of Information and Communication Technology (ICT) tools in a work-from-home (WFH) scenario though proved prospective for many user/educators. In the hindsight, it has disrupted work-life balance causing counterproductive results. The stakes were high with inadequate training, fund allocation, unidentified strategies, skill deficit and scarce collaborative approaches in the teaching fraternity, further making it quite difficult for an educator to cope-up with sudden challenges to re-invent the teaching trends accordingly. Hence, in this milieu, fast gaining attention is idea of 'Technostress'. It is conceptually defined as any form of ICT that stimulates stress over the user striving to interact effectively through numerous technological platforms/ gadgets for a substantial span of time. Though past researchers had analyzed it with job satisfaction, employee performance, work load, behavioral stress and aspects of work-family conflict; a special treatment of women educators (in Indian context) undergoing the stress is awaited. In furtherance, education technology with its affinity towards pedagogy, educational policy administrators, technology developers and market are yet to identify women educators need exclusively. Together factors bearing stress under technology-overdrive with strategies to alleviate the same. Now, it is time to reckon women educator's need, ability, and interest, which should be mapped on optimum and effective use of technology.

Keywords: Technostress, Women Educator, Pandemic, ICT.

Introduction

Technology is the application of tested engineered tools on identified and / or observed phenomenon, which calls for optimizing human life/ comfort. Interestingly, in Information and Communication Technology (ICT), technology's need was felt to promote the ease and flexibility of information sharing through an inclusive communication medium. However, this much needed aid has been shaped singlehandedly by technocrats, commercial communities and policy makers, who somewhere failed to acknowledge and meet the needs of not-so-techno-centric

beneficiaries (Stitch, Tarafdar & Cooper, 2018). The resulting mismatch of need and resources had various manifestations, wherein the study shall discuss on one such issue focusing on Technostress for women academicians/ educators with respect to effect of ICT in this contemporary and pandemic situation.

In the contemporary times, it is quite pertinent to address this issue for extensive academic use of digital/ technical tools during pandemic and post-pandemic scenario. With respect to the demanding work-from-home (WFH) obligation the digital exposure/ lack of it (though a need-of-the-hour), can be perceived stressful. Technological Stress/ Technostress can be understood as perceived consequence of overindulgence above numerous technological platforms for a significant period of time, where the user strives to make the interaction effectively efficient. For any educator-user such a stress can be detrimental in many aspects. However, for the time being the study would get its focus validated through the definition by Wang, Shu and Tu in 2008, whereas technostress is stated as reflection of one's discomposure, fear, tenseness and anxiety when one is learning and using computer technology directly or indirectly that ultimately ends in psychological and emotional repulsion and prevents one from further learning or using computer technology.

Technology & Education: Contemporary Situation

Now, in the twenty first century with education sector being identified by prospective developers as breeding ground for techno-race (Peeraer & Van Petegem, 2015; Coklar et al. 2016), it has opened multiple possibilities. In furtherance, on one hand ICT competent teacher out of their own volition explore avenues of rejuvenating conventional teaching through technology, few educators with lesser digital literacy get bouts of stress and continue with their tested non-technological techniques. This choice of the latter group of educators to steer away from digital option can be analyzed with an important research on technostress and academicians as indicated by Raghu-Nathan et al. in their research study. Also, they have stated that academicians suffer technostress with 'techno-overload, techno-invasion, techno-complexity, techno-insecurity, techno-uncertainty' as some of the causal components (Ragu-Nathan et al. 2008).

Moreover, the technostress has always been a companion with academic professionals with varying degree of effect on them (Estrada-Muñoz et al. 2020). Now, with this technostress in tow the contemporary pandemic times became a turning point for academics as digitalization of education and its effective use saw its exponential high. The academicians all across globe got diligently busy identifying best possible ways to blend technology and academics more out of compulsion than choice, which caused due to COVID-19 backdrop. Thus, it has become a stressful span for digitally-challenged educators who stumble at each odd encounter ranging from selecting the right digital platforms to efficiently utilizing

existing tools like mobile, laptops, personal computer, tablets, software/ applications, etc. towards effectively transferring resource into study material catering to learner needs at the same time juggling between personal-professional demands (Estrada-Muñoz et al. 2020).

Interestingly, pandemic has not been the only cause for an advertent change, educator's sense of accountability played a catalytic role in making efforts in this testing time. Also, the term 'accountability' according to survey report of UNESCO '2019 World Teachers' Day Fact Sheet, states that teachers' comprehensible workload contributes to stress. Moreover, this responsibility substantially reinforces the technostress in the contemporary times as well. Being consciously aware of lacking self-efficacy in managing digital tools yet striving to meet expectation of contemporary learners (who themselves are highly techno-savvy), leads to stress, anxiety and psychological disorders among educators. 'Symptomatology' discusses about aberration in individuals, which fails his/her dexterity in ordering and assimilating of fresh information derived from Internet, resulting from 'mental fatigue' (Estrada-Muñoz et al. 2020). This can be threatening to the very cause of teaching-learning process in a techno-driven world where educators' role quickly transforms from being Educator to Facilitator. A study on challenges, perspectives and impact of ICT on teachers find learners becoming 'educational agents' (Harnandez, 2017), as they keep exchanging their roles with the educator to enhance learning process. Hence, an educator unable to prove technical competence and wandering through myriad digital platforms is no less menace. And the menace has already proven to invite 'technostress and job burnout into workplace' (Jena & Mahanti, 2014), 'attitude, knowledge and anxiety' issues within the educator-academics fold causing detrimental outcome (Imhof, Vollmeyer & Beierlein, 2007; Coklar et al. 2016; Estrada-Muñoz et al. 2020).

Objective

To conceptually review and understand the technostress in accordance with working women's interface with ICT tools in academia.

Need & Relevance

Research on Indian academicians by Jena and Mahanti in 2014 related technostress influences by demographic factors, found women academicians are less techno-stressed compared to the male counterparts. Their analysis finds women academicians using technology driven by need and men guided by inclination and thus more stressed. Discussing on the same note another group of researchers had found technostress in general resulting from over exposure to working around the ever-evolving digital devices at workplace, and with the zeal to be available and constantly erasing home and work spaces (Fritz, Park & Jex, 2011). Also, women straddle home and workplace in most situations meeting demanding roles in both

spheres. The role conflict in women can always thus align on this, where she finds juggling personal and professional responsibilities. But the situation has now aggravated for most WFH employees, women educators being one of them. To establish the connect, technostress factors in Teacher-ICT interface by yet another research team included: work load, work environment (Kinman & Jones, 2005), changing technology and need for constant up-skilling (Fuglseth & Sorebo, 2014; Karuppan, 1997; Smith & Carayon, 2005; Coklar et al. 2016), erasure of work-home boundaries culminating in time management issues (Wang, Shu & Tu, 2008; Coklar et al. 2016) as major setback. Undeniably, male educators may stand to lose in equal measures like the female counterpart. Still, studies on teacher-technostress aspect remains limited (Coklar et al. 2016).

Rationale & Niche

The technostress has been an inseparable component in the recent times due to ICT dependent environment, which is more so in academia. Moreover, equipping to a complete ICT environment in general itself is difficult in complying with the modus operandi together executing the standards, alongside monitoring it has become the biggest challenge. These are the fundamental factors, which causes stress due to technological aspects. The women in educational sectors are experiencing this due to exertion in moderating their classes and subjects through online mode using communication devices periodically. However, it is a matter of discussion to what extent the technostress factors account for work-life imbalances. This signifies a study to be conducted exclusively on understanding the factors for technostress in women educators in Indian context which can have more evidences to inculcate the remedial prospects. Indian context because UNESCO 2019 World Teachers' Day Fact Sheet mentions on the basis of a global survey how there is alarming shortage of female/women educators in upper secondary school education. It specially mentions India where female teachers diminish by half with school's location stretching in remote geographical areas. The reasons listed by concerned study for shortage of female staff mentions the displacement settings, safety concerns and cultural practices. Though 2014 research of Jena and Mahanti did not see any significant impact of technostress upon marital status of academicians; there are some grey areas as far as 'cultural practices' and socio-cultural expectations from women and their multitude roles as daughter, wife/ homemaker, sister, teacher, caregiver, professional, etc. are concerned especially allied to Indian milieu.

Suggestions

The woman educator in a pandemic period braving through plethora of odds and challenges is also contributing into effective teaching-learning process. The research study in these lines shall help to streamline aids from human resource experts, technology developers, employers and policy administrators to devise better skill-enhancing ways to equip educators cope-up the technostress in the new

normal. Thus, a full-fledged study has to be conducted on working women in different academia ranging from schools to varsities so as to understand the technostress issues and problems to a large extent. This will facilitate to understand the utility impact of ICT devices causing technostress on women workforces serving in educational sectors. Also, it will possibly provide an effective solution towards balancing it effectively through plausible measures.

Conclusion

The women workforces in educational sectors are subjected to technostress in the contemporary and pandemic scenarios, wherein the ICT utility has been increasing sequentially at all levels. Hence, technostress becomes unavoidable aspect in the current trends, which has its impact more so with women. The reason being women have multifaceted roles and often subjected to stressors at all spheres of life especially in workplace, which demands holistic outputs amidst pandemic. This in turn makes them to experience technostress at large, wherein they tend to have imbalances. The congregation of diverse research studies addressing women's work-life balance measures has become the sheer necessity to focus for appropriate measures to achieve prospects.

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Belief System & Mind Patterns: Conceptual Overview of Impact on Women's Reproductive Health

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Abstract

A woman's reproductive system is one of the delicate and complex parts of the body and there are numerous factors that affect it causing dysfunction of the associated organs. Various biological and psychological changes occur in the body that are connected to the reproductive system. Many researches have been carried out about how specific medical conditions, genetic factors, hormonal fluctuations, stressful life events, psychological factors, socioeconomic & cultural factors, changes in lifestyle, etc. act as contributors to women's reproductive health. This research focuses on how one's belief system, thought process and mind patterns induces complications or pathological conditions within the reproductive system as well as overall well-being of women. Suggestions are given on how women can change their limiting beliefs, thereby embracing womanhood to lead a healthy life.

Keywords: Reproductive Health, Belief System, Mind Patterns, Women's Mental Health.

Introduction

A woman's reproductive health refers to the condition of female reproductive system during all stages of life, in which the system is made of multiple organs and hormone-producing glands. The World Health Organization defines reproductive health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity in all matters relating to the reproductive system

and to its functions and processes. An individual's overall health including the functioning of all body organs as well as mental capacity begins at the time of conception. Various factors contribute to a person's physical and mental health right from the foetal stage to a full grown adult, which includes hereditary influences, family environment, economic status of the family, nutritional state, cultural impacts and rituals, knowledge gathered from own experiences, etc.

In today's fast-paced world, women are facing numerous disorders and complications pertaining to their reproductive system. A few common disorders include early or delayed puberty, menstrual problems including heavy or irregular bleeding, polycystic ovarian syndrome, endometriosis, fibroids and tumors, infertility or reduced fertility, etc. Some of the known facts and ways to maintain a healthy reproductive system for women include eating a balanced diet and drinking plenty of water, exercising regularly and maintaining weight, getting enough sleep, managing stress in healthy ways, etc. Though numerous physical, environmental and lifestyle factors contribute to these disorders, research can be focused on mind patterns and belief system one has developed pertaining to oneself, the role one plays, womanhood, femininity and what are the limiting beliefs that are likely to have a negative impact on the reproductive system.

Beliefs & Formation of Belief System

Beliefs are important foundation of one's attitude and behavior. It is the mental acceptance or conviction in truth or actuality of an idea. The core beliefs that govern our behavior and reality are stored both in the conscious and unconscious part of our mind and these have impact on our actions, decisions, goals, thought patterns and feelings. The purpose of belief is to provide meaning to thoughts and ideas we hold about ourselves, making sense of where we are and the role we play in this world. According to Lazarus and Folkman (1984), our attitudes, behaviours and ability to cope can be attributed to direct or indirect beliefs we hold. An individual's beliefs are created through mental processes which involves perception, attention, valuation, storage and updating information (Seitz, Paloutzian & Angel, 2017). Thus, beliefs form the basis for interacting with the world and are also involved in coordinating cognitive processes, social processes, foundation for identity, social cohesion and social conflict. In addition to this, beliefs are vital in understanding various psychiatric and psychological pathologies. Hence, beliefs provide a better understanding of cognitive systems, social dynamics and ourselves (Connors & Halligan, 2015).

Contributors to Belief System

Belief systems are often formed during our childhood from our families, environment and from our own experiences and perspectives, and these are the foundation for our mental health. Any thought patterns that we exhibit consistently

becomes a belief and the beliefs we perpetuate over time becomes our belief system. Our belief system has an impact on how we think and feel and also how we behave and operate our lives.

When a belief is formed with strong emotions, it can remain unchanged in the subconscious until we take effort to change it consciously. It is these beliefs which are formed during childhood remain unchanged and cause problems even as adults. The limiting beliefs we have about ourselves affects our mental health.

Some common limiting beliefs are as follows:

a) Life is a struggle
b) My family doesn't understand me
c) Nobody loves me
d) I never succeed
e) I have to be in control all the time
f) I can't trust anyone
g) No one can help me
h) I don't do things perfectly
i) I am not good enough
j) Whatever I do, no one appreciates me
k) There is no use in complaining, it's pointless

The above-mentioned beliefs are formed over years based on life sequences and one's own experience. The sequences which have occurred in the past continues in the present as the mind is convinced these are true and cannot be changed. However, if one takes an initiative to observe what has caused all the similar patterns and what can be done to change this, then the process becomes easier and changes begin to happen. For e.g. if a child scores average marks continuously for a period of time and is put down by his/her family that this is the level of the child and will not improve, the child starts believing the same and diminishes his/her ability to improve or progress further. The mind of the child says, "whatever I do, they will say the same thing, they will not appreciate, so let me be the same". However, if the child decides at that point or even as an adult that, "whatever has happened is in the past, but now I can prove to my family as well as myself that I can do better in my studies/in my life and I am not that same average person anymore", then this new thought becomes a new belief and the child/adult starts working towards it.

Womanhood & Limiting Mind Patterns

Womanhood refers to the state or qualities that are considered to be natural characteristics of a woman. Generally, the qualities of womanhood or femininity include gentleness, humility, sensitivity, etc. This chapter focuses mainly on Indian

women and how they perceive womanhood, what kind of belief system they have developed about themselves and life in general as well as thought process and mind patterns related to being a woman, etc. The moment a baby is born, the first question is, "Is it a boy or girl?", and this refers to more than just a biological question. Even though our culture talks about divine feminine energies and qualities such as creativity, receptivity, healing, motherhood, nurturing, love, compassion, forgiveness, sensuality, etc., the social norms are constructed in such a way that woman is considered as extra responsibility or a burden to the family. A girl child is exposed to a specific set of rules and restrictions, social regulations and appropriate feminine behaviour right from the birth. Not every family has same rules and even families belonging to the same religion or caste do not practice or impose same set of cultural patterns on their girl child. However, there are a few common belief patterns, which includes "family's needs comes first, you have to be patient all the time, you cannot express your anger, you have to be dependent on men, father's or husband's decision is final, etc."

One creates a perception about womanhood and beliefs about the role of females from the family and society, which is constantly fed into the mind as negative thought patterns. The impact of these beliefs and patterns along with other contributing factors such as gender discrimination, lack of appreciation, constant criticism and so on is likely to affect a woman's mental health and in turn her reproductive system.

The thoughts and beliefs along with underlying emotions that one has developed over years contributes to overall health. A few examples of thought processes and beliefs are:

- My mother always criticizes me, my father always supports me
- I can rely on my siblings for support and care
- My opinion doesn't matter
- I can't trust my friends
- My hard work is never recognized
- My husband understands me
- My husband doesn't listen to me
- I can share anything with my friend
- No one gets my point
- My sister always looks up to me
- I am not their favourite child
- People treat me like this because I am a woman

Each and every thought process, either positive or negative, contributes to one's perception about self and life, frames one's attitude and behaviour and develops one's ability to handle life's sequences.

Probable Mental Patterns & Impact on Reproductive Health

The hormones that regulate the female reproductive system are nurtured by one's thoughts, emotions and beliefs. When the thoughts and mind patterns are persistently bothering oneself being a woman, all things pertaining to feminine process becomes a burden. According to Hay (1984), belief system about being a woman, self-criticism, feelings of disempowerment, disrespected, confusion, anxious, anger, self-doubt, lack of self-love and not trusting the natural flow of life acts as major contributors to menstrual disorders and rejection of the feminine process.

Our bodies respond to our inner thoughts, beliefs and emotions and other possible external factors. A possible cause for menstrual disorders may be difficulty in accepting one's femininity. For instance, one might have had a negative/unpleasant relationship with their mother, mother's or family's expectations imposed on the girl child, one's perception about women and their roles in the society, being discriminated against a male sibling, belief that men have more opportunities than women, beliefs and customs about menstruation and associated rituals, etc. These set of life sequences might give consistent thoughts and feelings that it would be better if one had been born as a man.

Changing Roles in Current Scenario

Women nowadays are taking active roles both in the family and society unlike the earlier generations. Growing financial needs, being independent and self-sufficient, creating one's identity and earning recognition, constant need to prove oneself in the family and professionally, socio-economic contribution as well as coping up with various life's demands have become a challenge especially if there is lack of emotional or moral support in the family. Apart from the external stressors including work stress, one's motivation level plunges due to misunderstanding and interpersonal conflicts within the family. This results in lack of self-care, thereby deteriorating one's physical and mental health.

Belief Change & Embracing Womanhood

The first step towards any change would be asking oneself, "Am I going to be in this same position? What can I do to change my situation?" Though the process of change is difficult and tedious, one has to decide to begin at some point. Being open to making changes will help us find ways to do them. One can seek professional help in facilitating the process of change and the belief systems. Hay gives a set of affirmations/positive statements to come out of limiting patterns and create new ones (Hay, 1984; Hay 2007).

- Female / Menstrual Problems - Denial of the self.
  Affirmation- "I rejoice in my femaleness. I love being a woman. I love my body."
- Ovaries represents point of creativity and issues with the ovaries may be due to one's inability to express or accept own areas of creativity. Ovarian cysts may represent regrets, holding onto old hurts, low self-esteem, fear of being hurt, feelings of neglect, unloved or not feeling good enough, etc.
  Affirmation- "I am balanced in my creative flow. I choose to make my life beautiful. I love me".
- Endometriosis could indicate that one is allowing old limiting beliefs to prevent from creating what one want in life. One may feel disappointed, frustrated, unsupported, unloved, holding onto feelings of rejection, thereby rejecting the feminine aspect.
  Affirmation – "I am both powerful and desirable. It's wonderful to be a woman. I love myself and I am fulfilled."
- Amenorrhea indicates that one might find it difficult or uncomfortable to be a woman. One may carry resentment towards their mother, feel like a weak and fragile daughter not wanting to take care of oneself, very demanding or being hard on self or others, disliking self, over-stressing, etc.
  Affirmation – "I rejoice in who I am. I am a beautiful expression of life, flowing perfectly at all times."
- Premenstrual Syndrome (PMS) can indicate denying feminine energy and rejection of the feminine processes, may feel uneasy about womanhood, inferior, disrespected, confused, anxious, angry, self-doubt, lack of self-love and not trusting the natural flow of life.
  Affirmation – "I now take charge of my mind and my life. I am a powerful, dynamic woman. Every part of my body functions perfectly. I love me."

Similarly, McHugh (2009) has proposed belief change exercise that can be used to convert limiting beliefs into healthy ones. The mind is conditioned and programmed by numerous factors and it's one's choice to come out of these conditioned frames and reframe them to accommodate many life's choices. Exercises are devised in such a way that unconscious part of the mind takes care of the healing and changing process through visualization techniques so as to create new attitude or perception, transform a negative thought or behaviour into a positive one.

Suggestion

The future researchers shall conduct a comprehensive study on women's belief system along with behavioural patterns to understand their reproductive health and its associated aspects.

Conclusion

Accepting the natural feminine process will enable women to come out of their rigid or limiting thought patterns about their ability and capacity to overcome difficulties and create new life patterns. Developing assertiveness, voicing out one's needs, respecting self and embracing womanhood can help women overcome their existing beliefs about being a woman and take care of their overall health.

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A Conceptual Overview of Risk Management in Education Sector Projects

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Abstract

Risk management is one of the important areas for implementation of any project and more precisely in the education sector. The conceptual research on risk management in projects within education sector is one of the key focus areas, which helps in identifying the circumstances leading to actualization. The outcomes that can arise while establishing a risk management framework in education projects can reduce the chances of effective reduction of risks. This requires a leading approach like categorization of risks to implement the same. Furthermore, in the perspective of modern educational risk management, rationality leading to risks formulates the effective risk handling process in a methodical and organizational condition. The outcome of risk management can favour the creation of effective and efficient risk management models along with strategies in the sphere of education. The present research study focuses on helping the educational employees into designing, planning, implementing, monitoring and evaluating the educational projects at various levels of the organization in order to manage the risks associated with it.

Keywords: Risk Management, Education, Projects, Framework, Organization.

Introduction

Education sector is regarded as a critical factor influencing the economic growth and development of human resources. The basic aim of the education sector is to improve the quality of education, wherein its primary objective is to empower the individual with skills and knowledge required to participate in any reforms of the state apparatus. The education sector is big and regarded as the important sector of state apparatus. The state devises strategies and reforms in education sector in the form of projects. The projects in education are prone to risks during the implementation process and risk management strategy is absolutely essential to achieve the project goals. The project implementation in education sector has inherent risks, which can be similar or different as that of the projects in other public sectors. The risk management projects will involve both education and governance specialists in all the countries. There is a structured approach involved

in designing the projects and it helps the governance specialists to explore the areas which are vulnerable to risks in a governance perspective. The education projects must aim at revisiting the key prospects of education sector and map the vulnerable pointers with the risks as explored by the governance specialists (Berg, 2010). Some of the common risks in education projects in these countries are weak institutions, lack of proper governance and exceeding corruption affecting the stability of education institutions at all levels. These risks also affect the sustainability of the education projects as they directly affect the financial management of the institution. The development of education projects is based sector analysis of risks involved in terms of economic and governance perspective.

Education sector is quite different than other public sectors as the students prefer to use their knowledge and skills acquired through education projects in to other public sectors due to various reasons like employment prospects and revenue generation. Hence, education sector is regarded as a fundamental block in reducing the poverty, developing skilled human resources for other public sector and also promote growth of economy. The field of study in education sector can be focused based on interest and it is evident that only individuals who work in higher education profile will be predominantly researchers or graduates in natural sciences. Moreover, it helps in meeting the demand and market needs of the labour sector by increasing productivity of skills leading to more sustainability in other sectors. The education sector sows the seed of lifelong learning for development of individual and social acceptance through its basic education. The numeracy, literacy and competency skills will prepare students to take up higher level career options like managers, technical engineers and administrative leaders. Thus, education sector plays a pivotal role in scaling up the economy and also improvement of technology in other public sectors.

Literature Review

The strategic framework of education projects are based on risks associated with inclusion, infrastructure, lack of quality, lack of availability of education assistance. The framework supports five critical areas for risk management for education project focusing on increasing and continuing the loans and assistance for higher studies, strengthening the aspects of skills, quality and inclusiveness at all levels of education, to include new and innovation models for improving service capabilities, to promote more scope cross border collaboration and regional level cooperation (Larman, 2004). In furtherance, the Legal framework in education sector will include clear allocation and accountability of functions related to education services, right to education, accreditation and registration process of educational institutions, certification process for teachers and progressive career graph, education loan and admission processes. The risk associated in education sector in a legal perspective are lack of gender equality where girl child is not allowed to go to

school, corruption and noncompliance to the legal framework affecting the quality of the education as a whole (Boehm & Turner, 2003).

Key Features of Education Sector

The key features of education sector include frameworks like:

➢ Institutional rights including the legal framework, policies and regulatory schemes from the government.
➢ Organizational aspects like planning strategies, financial management like budgeting, incentivising, management strategies, procurement decisions and practices and effective human resources to manage the dynamic projects of education sector.
➢ Sectorial operations in education sector will include processing student admissions, teacher recruitments, development of curriculum and learning tools and issue of certificates, degrees or diplomas, administration of school and supervision and development of capacity at all district levels.

Specifics of Projects in Education sector

The projects in education sector aims at the development of specific parameters like improving the accessibility of education and ICT in rural areas, educational equality and strengthening the education system in the streams of technical, vocational and higher education. The specific factors to be focused while planning an educational project are the areas of improvement in terms of quality of learning and teaching process, curriculum and desired outcomes (Popescu & Dascalu, 2011). Also, some of the education projects will be based on core functions like procurement focusing on distribution of text books and accessibility of learning tools in rural areas by effecting planning at all levels of education. In Japan and Russia, the private sectors also get involved in the education projects in order to support the government in specific projects like improving literacy rates; promote education of girl child, improving the capacities at physical and human level for better results. The countries like United Kingdom and United States of America are keen in introducing new innovative education projects to have special focus on pedagogic movement and quality monitoring in order to improve the human resources which are integral part of the education sector.

Need & Significance

We need to research on the risk management in Education sector as it has a greater influence in the key decision making process involving educational reforms and development. Moreover, such decision making is critical to eliminate the risks associated with the educational projects and it is significant among countries as it has direct impact on the economic, social and environmental wellbeing of the

country (Thywissen, 2004). The decision making process is very critical in a risk environment in projects in the education sector as it can hamper the core functioning of the educational projects and the desired outcomes leading to failure of educational reforms leading to crisis situations like lack of school safety, child safety , decreased quality of education etc. The risks which can occur due to lack of effective decision making process are miscalculation on allocation of government expenditure in the educational reforms, not availing the scope of taking decisions under discrete situations, disturbance and interference caused by politicians and stakeholders, easy approvals for ineffective educational institutions (Boehm & Turner, 2003). Moreover, the risk management can be focused on the clusters like: competency management, standardized content, updated learning process, personal safety & accommodation to teaching and non-teaching staffs, uniformity in the education infrastructure & equipment, clear protocols &standard operating procedures (SOPs) for management of educational institutions, optimization strategies to normalize the finance and cost of education (Ruzic-Dimitrijevic & Nikolic, 2008). Hence, there is a need to conceptually under the risk management process in education sector.

Objectives

➢ To conceptually review the risk management aspects in education sector and discuss its proven framework
➢ To understand the mapping of risk management parameters in education sector projects and study its impact

Risks in Education Sector Projects

The governance risks in education projects are the challenges in the allocation of government expenditure for education, opportunities for taking decisions, capacity of institutionalism is less, various disturbances like interference from politicians and existence of vulnerability in terms policy formulation, procurement of various tools for education, human resource challenges and operational risks and deviation of regulatory measures by policy makers, teachers, students and parents (Nikolic & Ruzic-Dimitrijevic, 2013). For instance, some of the risks associated with education projects are extra charge for tutoring the students, lack of disaster preparedness in schools and inadequate school infrastructure (Berg, 2010).

Risk Management in Education Projects

The risk management process is based on the corrective actions or strategies which help in combating against the risks identified within the educational system (Berg, 2010). Furthermore, the education system is fairly competitive and each country has to devise their strategy towards risk management in order to scale up their ranking in the education system according to OECD survey. If there is no proper risk

management reform in educational projects, then there will lag in social and economic development of the country. The governance of risks in the education sector can be better controlled by framing educational policies based on problem areas about that country in a social and economic perspective (Nikolic & Ruzic-Dimitrijevic, 2010).

The risks in education sector projects can be managed by using the innovative thoughts, knowledge and value based education leading to a more resilient and safe education sector. The risks associated with the framework of projects in education sectors for each scenario along with corrective management measures are indicated in the below table.

Table 1: Categories of Risks Associated in Education Projects

Institutional Risks	Organizational Risks	Sectorial Risks
Institutional focus framework involves the legal clauses in education, the policies and regulatory quality monitoring systems. The purpose is to improve the transparency in the education sector and achieve the desired quality standards. Institutional risks in educational department may arise out due to the following scenarios (Prichinin, 2013)	Organizational Risks will evolve in the process of planning like allocation of funds for schools, data manipulation and non-compliance in school locations Financial management like risks associated with low budget, misuse of funds, inadequate monitoring of education documents and failure in auditing the same, poor information system damaging the allocation of required resources	Sectorial Risks are associated with the process of admission of students, scholarships for deserving students, quality of curriculum and learning tools, certification and training programs for teachers, student assessment and overall administration of the school.
Example and Risk Impact The policy framework for education sector is not aligned with risks associated and it creates more impact on the people. There is clear bias in the allocation of funds to schools and the	**Example and Risk Impact** The financial losses and implications arising due to lack of capacity of financial management, lack of effective auditing systems. There is no clarity on data	**Example and Risk impact** The manipulative risks arising out due to lack of transparency in the certification process and processing the results of examination. This is higher degree of risk in

| politicians regard education as soft investment due to internal risks like corruption, lack of responsibility towards academics of students and challenges in school maintenance and cost. There is also lack of professional code of ethics for school employees which have paved way for corrupt practices. | management and instances of inaccurate documentation and incorrect reporting can lead to risks of fund leakage leading to financial instability of the institution. There is higher degree of risks affecting the accessibility to education, the equity model and the quality of education (Wisner, 2006). | education sector as it can affect the integrity of the system as a whole. Lack of transparency in the education system with respect to the teacher selection and obtaining fraudulent licenses for teaching can affect the entire educational system and also it affects the career development of students as well (Boehm & Turner, 2003). |

Source: Boehm & Turner, 2003

Discussion

The lack of accountability is one of the reasons of risk in decision making process and it can lead to very poor service capabilities, leakage of resources and increases the chances of misalignment of goals and actions leading to non-compliance of education reforms (Huber, 2009). The key stakeholders in educational projects of the countries are policy planners, makers and researchers, the legal board members who do the certification and accreditation process, educational faculties and mentors, stationery suppliers, external investors and partners, workers unions for teachers and school managements, entities like judiciary for any legal battles and audit professionals (Popescu & Dascalu, 2011). The potential risks in stakeholder management can be identified by creating an informal or formal relationship with all the stakeholders. The faculties may be recruited in a partial manner without validating and assessment of qualification and faculties without any recommendation can be assigned to remote and challenging locations. The lack of discipline in conducting exams and sale of assessment questions are potential risks which are controlled by stakeholders (Boehm & Turner, 2003). Also, stake holder analysis is very critical in terms of successful functioning of educational projects. The risk management process of stake holders will involve the following:

1. Inculcating accountability for the stakeholders and mapping it with their demand (Huber, 2010).
2. To propose a clear and transparent framework to regulate resource allocation process.
3. To conduct economic and political analysis in a stake holder's perspective in order to identify the problem areas and their impact on the government policies

and explore alternate strategies to combat against the risks in governing the educational projects (Huber, 2010).

4. Risks associated with stakeholders can hamper the core functioning of the educational projects and it can create detrimental effect on the governance and economy of the country if there is no proper risk management strategy.

In the recent years, there are many effective risk management strategies like brainstorming, risk assessment, root cause analysis, impact matrix, etc. are in practice. However, the risk management effectiveness can be achieved by adopting individual and / or combination of all the aforementioned strategies for successful implementation of education project within the time frame.

Suggestions

Effective risk management in education sector if the sector standardizes the learning framework and create more opportunities based on skill level and learning outcomes. It is a good practice to set up standards in a clustered approach for better results. Finally, the setting up of internal audit processes, procedures, infrastructure, mechanism and operational efficiency of all education sectors. Also, there is a serious need to develop an automated tool for risk management in education. The future researchers have to develop effective and customized risk management tool involving all the strategies and inbuilt application to identify, mitigate and resolve the risks in education sector. This in turn paves the way for a fruitful educational reform in the country as a whole.

Conclusion

The risk management in educational sector will focus on stakeholder participation, decentralized approach, effective policies with transparency in decision making, supporting regulatory environments for collaborations. It is to be noted that the risks associated with education projects can hamper the core functioning and it can create detrimental effect on the governance and economy of the country if there is no management strategy to mitigate them. Furthermore, the lack of effective risk management strategy can lead to emergence of more state monopolies leading to drastic effects like lack of transparent policies and accountability towards the objectives of education projects. Also, ineffective risk management strategy will lead to very slow phased innovation and also minimizes the choices available for sustainability of the education project. Hence, the risk management in education sector is quite indispensable towards effective implementation.

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Fuzzy System Based Load Frequency Control of Hydro-Thermal -Thermal Interconnected Power System

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Abstract

Today, in power systems the Load Frequency Control (LFC) problem plays a vital role in an interconnected power system, wherein it maintains the system frequency and tie line flow at their scheduled values during normal period. It is due to frequency of power system, which changes over time with respect to continuous load variation. The present chapter proposes a new methodology to study the Load Frequency Control (LFC) problem of a three area inter-connected system using R Fuzzy system (FS) approach. Moreover, this technique is applied to control the systems which include three areas considering a non-linearity Generation Rate constraint (GRC) having two steam turbines and one hydro-turbine tied together. The main advantage of this controller is its high insensitivity to large load changes and plant parameter variations even in the presence of non-linearity. Furthermore, it is tested on a three-area power system to illustrate its robust performance. The results obtained by using Rule Based Fuzzy PID controller explicitly show that the performance of this proposed controller is superior to conventional controller in terms of several parameters like overshoot, settling time and robustness.

Keywords: Load Frequency Control, Reliability, Fuzzy Controller, Power System.

Introduction

Today, due to rise in the demand for electric power, electric power system is becoming more and more complicated. The power system operates in normal state, which is characterized by constant frequency and voltage profile with certain system reliability. Therefore, the supply of electric power with stability and high

reliability is required. Under dynamic operation of power system, decentralization of control action to individual areas is important. Load Frequency Control (LFC) is a very important issue in power system operation control for supplying sufficient and reliable electric power with good quality. An interconnected power system is a combination of different control areas, in which two areas are connected together with a transmission line called tie-line. In each control area, all generators are assumed to form a coherent group. The power system is subjected to local variations of random magnitude and duration. Moreover, the satisfactory operation of a power system, the frequency and tie-line deviations should be maintained within the specified tolerance. The frequency of a system depends on active power balance. As frequency is a common factor throughout the system, a change in active power demand at one point is reflected throughout the system.

Objectives

- ➢ To develop mathematical models for multi-area power system
- ➢ To devise and implement PID and fuzzy Load Frequency controllers for multi area interconnected power systems

Literature Survey

The coherent areas are interconnected through tie lines which are used for contractual energy exchange between areas and provide inter-area support during abnormal operations (Talaq & Al-Basri, 1998) Automatic Generation Control (AGC) or Load Frequency Control (Chaturvedi, Satsangi & Kalra, 1999; Chown & Hartman, 1998) is a very important issue in power system operation and control for supplying sufficient and reliable electric power with good quality. In large interconnected power system, thermal, hydro, nuclear and gas power units generate large amount of power. The gas power plants, tidal power plants, nuclear power plants, etc. produces a very small percentage of total system generation. Hence, such plants do not play a significant role LFC of large power system and gas plants are used to meet peak demands only. Thus, the natural choice for LFC falls on either thermal or hydro units. Also, it is observed that most of the earlier works in the area of LFC pertain to interconnected thermal systems and relatively lesser attention has been devoted to the LFC of an interconnected hydro-thermal system (Sudha & Santhi, 2012) involving thermal and hydro subsystem of widely different characteristics. Concordia and Kirchmayer have given the LFC of a hydro-thermal system (Sudha, Raju & Sekhar, 2012) considering non-reheat type thermal system neglecting non-linearity like generation rate constraints. This has been observed by Nanda, Kothari and Satsangi in 1983, wherein they presented the comprehensive analysis of AGC (Khamsum et al. 2006) of an interconnected hydrothermal system in continuous-discrete mode with classical controllers. Usually, the hydro system uses a mechanical governor and the thermal system uses reheat turbine in an interconnected hydro-thermal system. It is over decades, intelligent controllers like

Fuzzy Logic Controllers (FLCs) have been successfully developed for analysis and control of nonlinear systems (Indulkar & Raj, 1995; Shayeghi, Jalili & Shayanfar, 2005). The major advantage of this fuzzy reasoning approach is motivated to handle ambiguous information, like uncertainties in available knowledge (Chang & Fu, 1997; Indulkar & Raj 1995; Gayadhar, Sidhartha & Ardil, 2009) proposed different fuzzy scheduling schemes for conventional PI and/or PID controllers. These methods provide good performances under steady state but the system transient and dynamic responses are relatively. Moreover, the main objective of this research is to determine Load Frequency Control problem for a multi area power system, wherein taking into consideration the uncertainties in the parameters of power system. Thus, to solve this problem, many researchers have proposed basic fuzzy logic-based controllers to power systems (Mendel, 2000; Nanda & Sakkaram, 2003) and termed as classical or Type-1 fuzzy.

Problem Identification

The main goals of Load Frequency Control (LFC) are to maintain frequency and to control change in tie-line power between control areas. In furtherance, the conventional controllers do not take into consideration due to inherent nonlinearities of different power system components. They also failed to adapt the controller gains with change in operating points.

Methodology

A power system is made up of several sub-systems, which are used to deliver electricity from generation to consumption. It is important to see that frequency of all areas in a steady state remains identical. The LFC is a control method that ensures all areas in steady state have zero change in frequency and tie-line power deviations. Moreover, in this present research study work fuzzy logic controllers are implemented for large scale power systems which are distributed into for LFC problem.

Modeling of Power System & Problem Formulation

Usually, a large-scale power system consists of different complicated nonlinear models. It constitutes of number of inter-connected control areas, which are linked by tie-lines power, but to design LFC, a simplified and linearized model is employed. The detailed block structure consisting of two steam turbines and one hydro -turbine tied together through power lines of multi area power system including Generation Rate Constraint (GRC) for load frequency control has been investigated in this chapter as shown in fig.1 with Area Control Error (ACE) and its derivatives are given as the inputs to controllers.
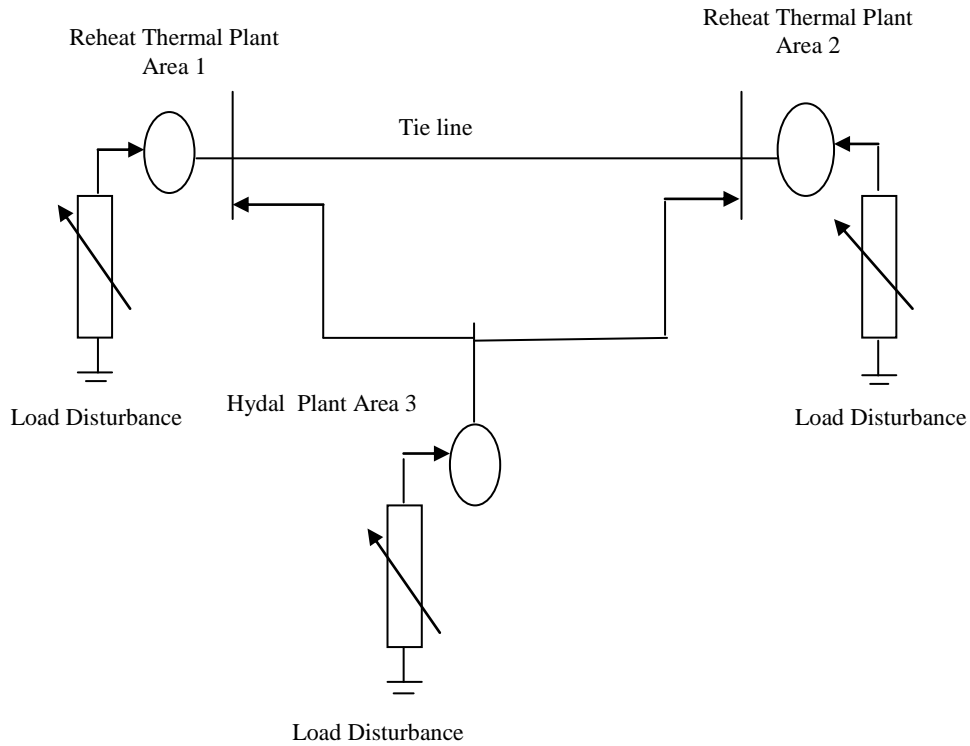
Fig. 1: Three - Area Interconnected Power System

The detailed block diagram of interconnected power system model is shown in figure 2, wherein the parameters of three areas are given in Appendix (Surya Prakash & Sinha, 2011). Also, the modeling of speed governors and turbines are discussed in (Kothari, Kauld & Nanda, 1980). The power generation can change only at a specified maximum rate for steam plants. Hence, in order to restrict the generation rate for steam plants, limiters are added to the governors. A typical value of Generation Rate Constraint (GRC) for thermal units of 3 percent / min is considered. The two limiters, bounded by $\pm$ 0.0005 are used within the LFC to prevent the excessive control action. The generation rate constraints for all the areas are taken into account by adding limiters to the turbines.
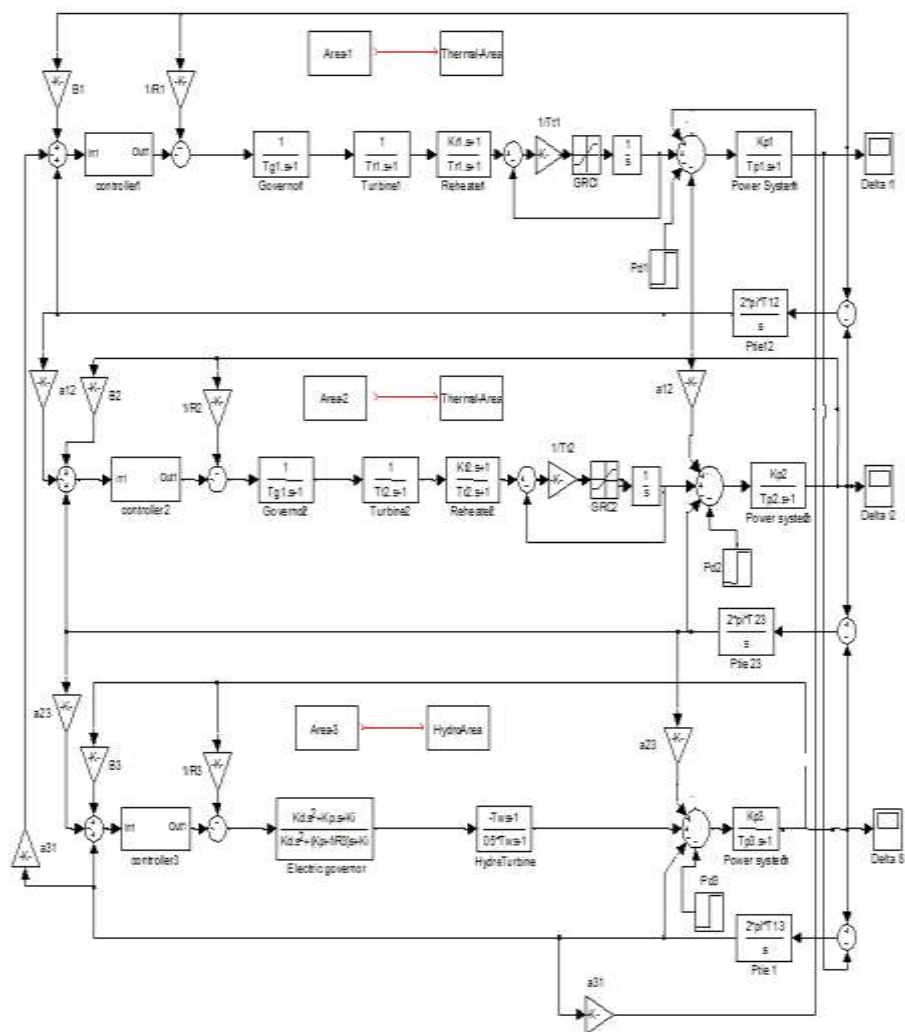
Fig. 2: Block Diagram of Three Area Interconnected system

Fuzzy Logic controllers

Fuzzy logic controllers have no fixed structure like conventional PI, PD and PID controllers because there is still no well-defined criteria for deciding on the shape of MF's, the number of linguistic values, the standard rule base, the most appropriate inference mechanism and defuzzification strategy. This is probably due to these aforementioned reasons with regard difficulties in designing an FLC analytically (Sudha & Santhi, 2012). The structure of a Fuzzy PI controller preserves the basic properties and merits of general PI controller. It has four simple fuzzy IF-THEN rules. The basic characteristics of proposed design may differ from other fuzzy or non-fuzzy PID-type controllers, which include the following aspects:

1. It has the same linear structure as the conventional PI controller, but has variable gains; the proportional and integral gains are non- linear functions of the input signals.

2. The controller is designed based on the precise mathematical model of a discrete PI controller, from which the fuzzy control law is derived.

3. Membership functions are simple symmetric trapezoidal and asymmetrical trapezoidal, which use only four fuzzy logic IF-THEN rules with two membership functions in each input and use eight fuzzy logic IF-THEN rules with three membership functions in each input.

4. The Fuzzification, control-rule execution and defuzzification steps are all embedded in the final product of fuzzy control law, which is an explicit conventional formula, so that the fuzzification-rules-defuzzification routine is not needed for all the process control steps.

The performance of conventional PID controller is considered to be quite adequate for linear first order system with the small-time delay. However, its performance for a system with large time delay and also for a nonlinear system may be very poor due to large overshooting and excessive oscillation (Sudha & Santhi, 2012). To improve the performance of a conventional PID controller, engineers have tried to use fuzzy PID controller instead of classical ones. Ying has developed the fuzzy PID controller (Castillo, Urias & Mellin, 2007). He also suggested that the improvement is actually due to the nonlinearity of fuzzy PID controller (Sudha & Santhi, 2012). The present work is an attempt to analyze in detail the derivation of analytical structure of fuzzy controllers using Trapezoidal MFs (Symmetrical and asymmetrical). To show the effectiveness of fuzzy controllers over conventional controllers' time delay systems and nonlinear systems are considered for simulations. As a case study of dc motor along with saturation non-linearity, an aircraft attitude-control system and high-speed steel-rolling mill are considered and simulations are carried out to demonstrate the superiority of Fuzzy PID controllers over the conventional PID controller have done by using symmetric and asymmetrical Trapezoidal membership sets in input and output.

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Table 1: Control Rules for Fuzzy Controller

Rule-1	If $x(\dot{\delta})$ is P and $x(\delta)$ is P and $x(\ddot{\delta})$ is P then output is NB
Rule-2	If $x(\dot{\delta})$ is P and $x(\delta)$ is P and $x(\ddot{\delta})$ is N then output is NS
Rule-3	If $x(\dot{\delta})$ is P and $x(\delta)$ is P and $x(\ddot{\delta})$ is Z then output is NM
Rule-4	If $x(\dot{\delta})$ is P and $x(\delta)$ is N and $x(\ddot{\delta})$ is P then output is NM
Rule-5	If $x(\dot{\delta})$ is P and $x(\delta)$ is N and $x(\ddot{\delta})$ is Z then output is Z
Rule-6	If $x(\dot{\delta})$ is P and $x(\delta)$ is N and $x(\ddot{\delta})$ is N then output is NS
Rule-7	If $x(\dot{\delta})$ is P and $x(\delta)$ is Z and $x(\ddot{\delta})$ is P then output is NM
Rule-8	If $x(\dot{\delta})$ is P and $x(\delta)$ is Z and $x(\ddot{\delta})$ is Z then output is NS
Rule-9	If $x(\dot{\delta})$ is P and $x(\delta)$ is Z and $x(\ddot{\delta})$ is N then output is Z
Rule-10	If $x(\dot{\delta})$ is N and $x(\delta)$ is P and $x(\ddot{\delta})$ is P then output is NS
Rule-11	If $x(\dot{\delta})$ is N and $x(\delta)$ is P and $x(\ddot{\delta})$ is Z then output is Z
Rule-12	If $x(\dot{\delta})$ is N and $x(\delta)$ is P and $x(\ddot{\delta})$ is N then output is PS
Rule-13	If $x(\dot{\delta})$ is N and $x(\delta)$ is N and $x(\ddot{\delta})$ is P then output is PS
Rule-14	If $x(\dot{\delta})$ is N and $x(\delta)$ is N and $x(\ddot{\delta})$ is N then output is PB
Rule-15	If $x(\dot{\delta})$ is N and $x(\delta)$ is N and $x(\ddot{\delta})$ is Z then output is PM
Rule-16	If x$(\dot{\delta})$ is N and x(δ) is Z and $x(\ddot{\delta})$ is P then output is Z
Rule-17	If $x(\dot{\delta})$ is N and $x(\delta)$ is Z and $x(\ddot{\delta})$ is Z then output is PS
Rule-18	If $x(\dot{\delta})$ is N and $x(\delta)$ is Z and $x(\ddot{\delta})$ is N then output is PM
Rule-19	If $x(\dot{\delta})$ is Z and $x(\delta)$ is P and $x(\ddot{\delta})$ is P then output is NM
Rule-20	If $x(\dot{\delta})$ is Z and $x(\delta)$ is P and $x(\ddot{\delta})$ is N then output is Z
Rule-21	If $x(\dot{\delta})$ is Z and $x(\delta)$ is P and $x(\ddot{\delta})$ is Z then output is NS
Rule-22	If $x(\dot{\delta})$ is Z and $x(\delta)$ is N and $x(\ddot{\delta})$ is P then output is Z
Rule-23	If $x(\dot{\delta})$ is Z and $x(\delta)$ is N and $x(\ddot{\delta})$ is N then output is PM
Rule-24	If $x(\dot{\delta})$ is Z and $x(\delta)$ is N and $x(\ddot{\delta})$ is Z then output is PS
Rule-25	If $x(\dot{\delta})$ is Z and $x(\delta)$ is Z and $x(\ddot{\delta})$ is P then output is NS
Rule-26	If $x(\dot{\delta})$ is Z and $x(\delta)$ is Z and $x(\ddot{\delta})$ is Z then output is Z
Rule-27	If $x(\dot{\delta})$ is Z and $x(\delta)$ is Z and $x(\ddot{\delta})$ is N then output is PS

Simulation Results

The frequency deviation of the first area, Δf_1, the frequency deviation of the second area, Δf_2 and the frequency deviation of the third area, Δf_3 signals of the closed-loop system are shown in figures 3 to 5. Using proposed method, the frequency deviations and inter area tie power is quickly driven back to zero and the controller designed using Type-1fuzzy controller has the best performance in control and damping of frequency and tie-power in all responses when compared with conventional PID Controller.
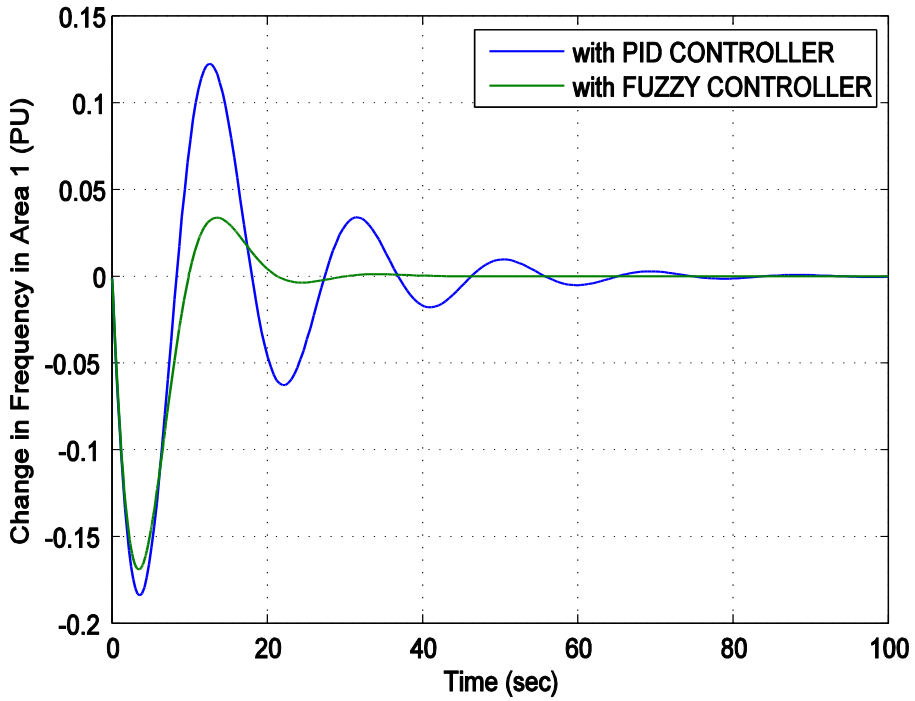
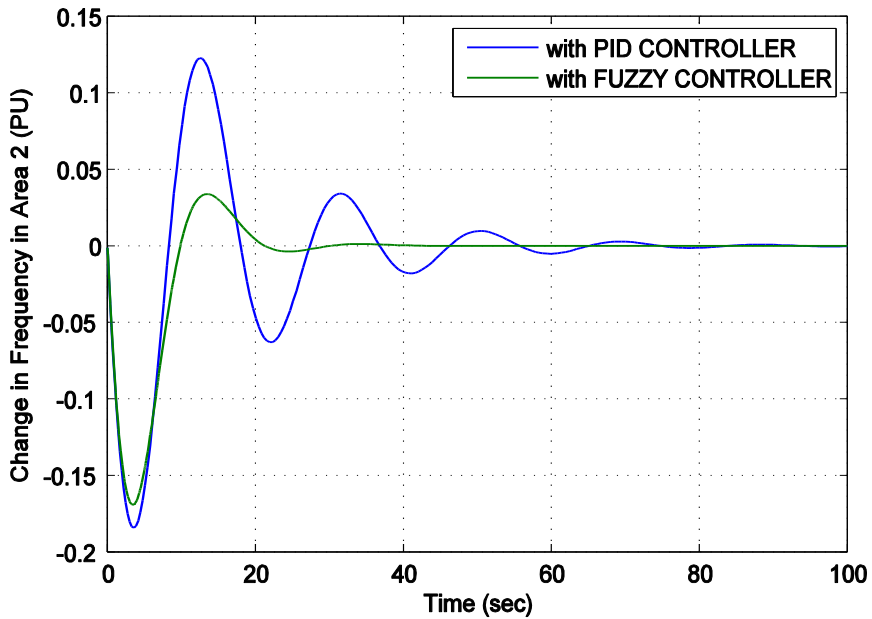**Fig.3: Change in Frequency Deviation in Area 1**

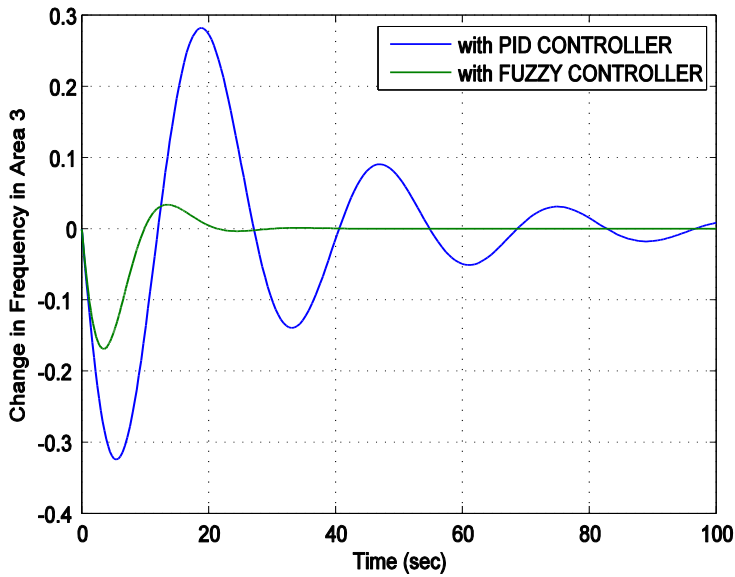**Fig.4: Change in Frequency Deviation in Area 2**

Fig.6: Change in Frequency Deviation in Area 3

Table 2: Frequency response in various control strategies

Frequency	Controller	Peak Overshoot	Peak Undershoot	Settling Time (Sec)
Change in frequency in Area 1	PID	0.12	-0.18	76.54
	Type 1 Fuzzy	0.033	-0.16	37.9
Change in frequency in Area 2	PID	0.12	-0.18	72.85
	Type 1 Fuzzy	0.034	-0.17	34.58
Change in frequency in Area 3	PID	0.28	-0.32	>100
	Type 1 Fuzzy	0.033	-0.17	30.11

Suggestion

Fuzzy PID controller is designed and acted as controller for solving LFC problem for multi area power system, wherein future researchers may focus on designing an optimization-based design methodology using Genetic Algorithm-Fuzzy controllers or Honey Bee Mating optimization algorithm for tuning Fuzzy PI/PID controllers. The LFC design can also be done using certain techniques like Active Disturbance rejection control for Fuzzy system. The present research work may be extended with drawing extra degree of freedom framing as Type-2 Fuzzy.

Conclusions

The present research proposed a new method for Load Frequency Control using fuzzy controller including Generation Rate Constraint (GRC) with system uncertainty parametric and various loads conditions. The simulation results proved that designed controller guarantees the robust performance such as precise reference frequency tracking and disturbance attenuation under a wide range of parameter uncertainty and area load conditions. Also, upon reducing the rule base, it has been proved that the output of reduced rule base follows the outputs of full rule base. Moreover, the Settling Time, Maximum Overshoot and Undershoot indicated the robustness of proposed Fuzzy controller has better performance as compared to conventional PID controller.

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Discovery of Human Emotion using Fuzzy based Cognitive Model

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Abstract

The emotion of a human could be identified using Speech, Image and Question and answer session. Also, the emotion in speech is identified using the pitch and intensity. The emotion identification with image is done using Support Vector Machine. The present chapter envisages into an intelligent system, which is designed to understand human emotions more precisely speech emotion identification and intends to generate actions via cognitive system. It has mainly focused on developing an online incremental learning system of human emotions using Takagi-Sugeno (TS) Fuzzy model. The main objective of this system is to detect whether the observed emotion needs a new corresponding multi-model action to be generated or it can be attributed to one of the existing actions in memory. The multi-model consists of voice input, facial expression. The combined results have been classified using TS Fuzzy Model.

Keywords: Mel Frequency Cepstral Coefficient, Speech, Emotion, Identification, TS Fuzzy Model, Pitch, Intensity, Cognitive, Image.

Introduction

Emotion plays a significant role in daily interpersonal human interactions. This is essential to our rationale to make intelligent decisions. Also, it helps us to match and understand the feelings of others by conveying our feelings and giving feedback to others. The research studies have revealed the powerful role that emotion play in shaping human social interaction. It considers about the thinking of human brain and how the nervous function works. The main domain is Cognitive Science, which means study of thought and mind. Moreover, there two modules used namely,

speech recognition and facial expression recognition. In speech recognition, we use a MFCC [1] [2] (Mel Frequency Cepstral Coefficient). It is a technique, which takes voice sample as input and one can use audacity software for voice record in .WAV format. Furthermore, if one wants to convert an .MP3 file to .WAV format, the audacity could be used. This in turn helps to change the voice file format from MP3 and WAV to WAV and MP3 respectively. In facial recognition, one can include many kinds of emotions i.e., anger, sad, happy, surprised, neutral and disgust. For instance, if one gives an image into a process, it will check and find out the kind of emotions that are hiding in the face and showing it. Keeping these aforementioned aspects, this research chapter attempts to find out the emotions through speech and facial expressions.

Literature Review

Speech Based Emotion Recognition

The speech recognition system is based on Dynamic Time Warping (DTW) and Hidden Markov Model (HMM) from which human speeches have been decoded into signals for digital processing. The endpoint detection was applied to remove unvoiced area between segment words, and then the features were extracted by Linear Predictive Coding (LPC), MFCC and Gamma Tone Cepstral Coefficient (GTCC). The phoneme model has been built from speech signals in the training database. HMM evaluation was performed to get the recognized word. Then words were composed to get the sentence in text. Dynamic Time Warping (DTW) was used for clustering the feature vectors extracted from Linear Predictive Coding (LPC), MFCC and Gamma Tone Cepstral Coefficient (GTCC). In furtherance, the spoken sentence was represented as sequence of independent acoustic phonetic units. Thus, Hidden Markov Model (HMM) was used to encode the temporal evolution of the extracted features. Gaussian distributions were used to measure variations in speaker, accent and pronunciations.

The recognition of hearing-impaired speech has been carried out by the use of Hidden Markov Model with LPC, MFCC and Perceptual Linear Predictive (PLP) features. The mixture values in HMM was selected randomly according to the number of speakers. The isolated digits in Tamil were taken as input and the performance was evaluated using accuracy and speed. The effect of fixing the appropriate number of states and the number of mixtures in the accuracy of the connected word HMM system is a major constraint. The data considered was the connected digits taken from deaf and hard hearing speech. A phoneme model was used in this work. The different features like LPC, PLP and MFCC were considered and the accuracy of the system was analyzed with 3 to 10 number of mixtures and 3 to 6 number of states. In human life emotions play important but it is very difficult to predict. Different methods are discovered for emotions recognition like SER, HMI AND MFCC.SER system identifies emotions on paralinguistic basis. Human

Machine Interaction derives major motivation for the work [3] [4]. MFCC coefficients in the feature vector for identifying the paralinguistic content. The core aim of emotion recognition system is to enable Human-Computer Interaction (HCI) and MFCC is one of the spectral features, wherein SVM is used for classification. Hence, to solve multi-class problems numerous single stage SCM's are used. In the last two decades, speech signals, as become one of the most natural media of human communication. Furthermore, it has been developed for automatically identifying human emotions from speech signals, which is called speech emotion recognition. The two typical deep learning methods are Deep Neural Networks (DNN), Deep Convolutional Neural Networks (DCNN).

Major Obstacles of Emotion Recognition

- Emotions are subjective, people would interpret it differently. It is hard to define the notion of emotions.
- Annotating an audio recording is challenging. Should we label a single word, sentence or a whole conversation? How many emotions should we define to recognize?
- Collecting data is complex. There are lots of audio data can be achieved from films or news. However, both of them are biased since news reporting has to be neutral and actors' emotions are imitated. It is hard to look for neutral audio recording without any bias.
- Labeling data require high human and time cost. Unlike drawing a bounding box on an image, it requires trained personnel to listen to the whole audio recording, analysis it and give an annotation. The annotation result has to be evaluated by multiple individuals due to its subjectivity.

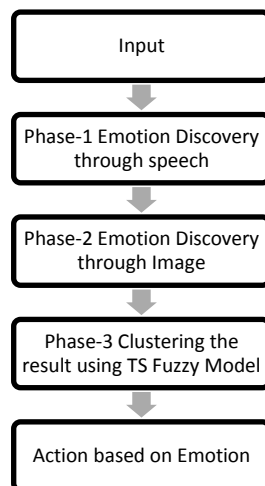**Human Emotion Recognition Using Fuzzy Based Cognitive Model**

Fig.1 Human Emotion Using Fuzzy Based Cognitive Model

Phase 1 - Emotion Discovery Through Speech

In this section we consider about the speech techniques. In Speech signal, the voices are different from one person to another person not all the person voice are same at all time.Here we seen about the what kind of emotions are have humans vocal system [5].
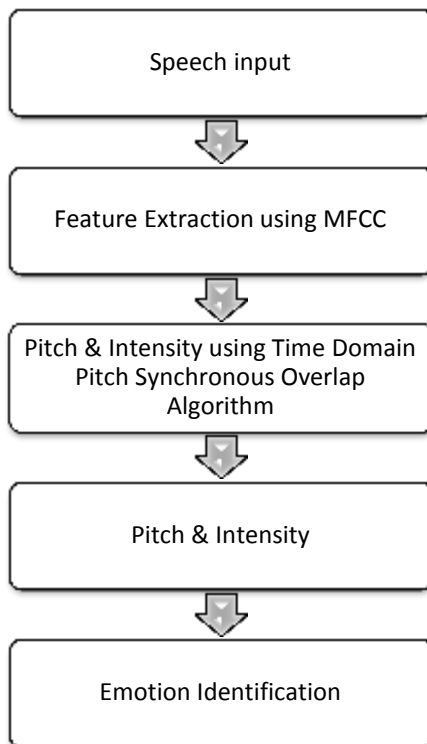

Fig.2 Speech Based Emotion Identification

The Emotions are as follows:

- Sad
- Happy
- Surprised
- Neutral
- Angry

So, herewe seen about this kinds of emotions.To find out these emotions using mffcc algorithm. MFCC algorithm means Mel Frequency Cepstral Coeffcient algorithm [6][7][8] are based on the known variations of the human ear's critical bandwidths with frequencies which are below a 1000Hz [9][10][11]. MFCC is a speech signal algorithm [12][13].

The energy is the first coefficient in the MFCC and the energy for each frame is manipulated[14]. The pitch is calculated and pitch range is used to identify the emotion.

$$Pitch = \frac{Energy}{Time} \qquad (1)$$

$$Time = \frac{1}{frequency} \qquad (2)$$

Pitch & Intensity

Pitch

Pitch depends on the frequency of a sound wave. Frequency is the number of wavelengths that fit into one unit of time. Remember that a wave length is equal to one compression and one rarefaction [15].

Pitch Range

In music, the range or chromatic range, of a musical instrument is the distance from the lowest to the highest pitch it can play. For a singing voice, the equivalent is vocal range. The range of a musical part is the distance between its lowest and highest note.

The different speech signals with different emotions were recorded and the 20 speech signals were used to train the emotion recognizer and the range of pitch for each emotion has been found.

Table: 1 Pitch Range of Different Emotions

Emotions	Pitch Range (in Hertz)
Sad	200-250
Happy	370-600
Surprised	300-350
Neutral	125-200
Angry	75-125

Phase 2 - Emotions Discovery Through Image

In this phase we seen about the image reactions and then to find out what kind of emotions having there in the face [16] [17] [18].Here we use a SVM based algorithm.SVM means support vector machine, which is fundamentally a binary classification algorithm [19]. It falls under the umbrella of machine learning. Image processing on the other hand deals primarily with manipulation of images [20] [14]. For example,image filtering,where an input image is passed through a laplacian filter to be sharpened.
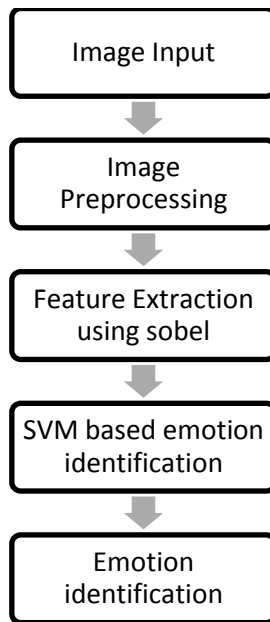
Fig.3 Image Based Emotion Identification

The image will be preprocessed to remove the noise in the image. The Feature is extracted from the image and using Support Vector Machine, the emotion is recognized. If one want to relate the two, an SVM might be used to perform image classification. For instance, given an input image, the classification task is to decide whether an image is a cat or dog. The image, before being input into the SVM might have gone through some image processing filters so that some features might be extracted such as edges, color and shape [22] [23] [24].

Feature Extraction using Sobel

The Sobel filter is used for edge detection. It works by calculating the gradient of image intensity at each pixel within the image. It finds the direction of the largest increase from light to dark and the rate of change in that direction. It works by detecting discontinuities in brightness. Edge detection is used for image segmentation and data extraction in areas such as image processing, computer vision, and machine vision. Common edge detection algorithms include Sobel, Canny, Prewitt, Roberts, and fuzzy logic methods [25]. In this method, image will be pre-processed, which means it will clear all the errors, duplicate data, extra spaces it will all under the process of sobel filter.

Values of Each Image

Step 1: Get input image
Step 2: Extract the features from the image using image read function
Step 3: The linear kernel function is used to classify the image emotion

Step 4: The input image vector is compared with the image vector in database and
Step 5: The Minimal distance between the input & training data is used to identify the emotion
Step 6: Emotion is identified

Table 2: Mean Values Range of Different Emotions

Emotions	Mean Values
Disgust	1-54
Neutral	55-100
Happy	101-139
Sad	140-179
Angry	180-222
Surprised	223-250

In this phase one can see about image reactions and find out what kind of emotions having there in the face using SVM based algorithm, wherein SVM refers to support vector machine [26].

Phase 3- Clustering The Result Using Ts Fuzzy Model

In this section we combine the phase 1 and phase 2 with using a TS fuzzy model.

Takagi-Sugeno Fuzzy Model (TS method)

This model was proposed by Takagi, Sugeno and Kang in 1985. The format of this rule is given as follows:

If x is 'A' and y is 'B' Then z = f (x,y)

Here, AB are fuzzy sets in antecedents and z = f (x,y) is a crisp function in the consequent.

If 7=x and 9=y then output is z=ax+by+c

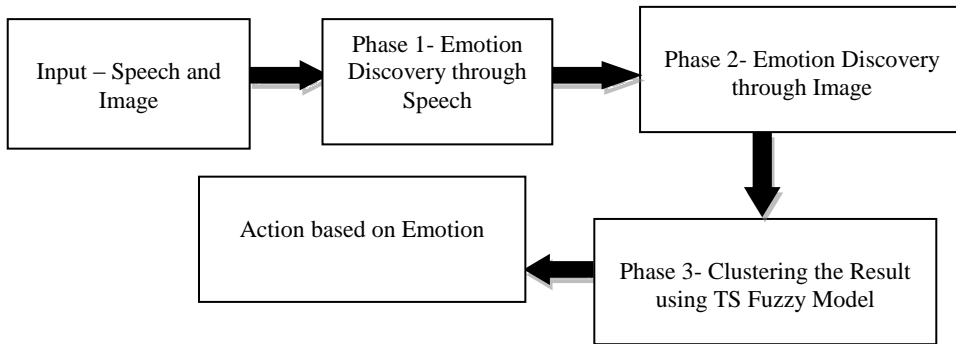Finally, the study showed the emotions through this model indicated below:

Fig.4 Takagi-Sugeno Fuzzy Model

The combination of Phase I and Phase II is the clustering concept of Phase III.

Takagi-Sugeno Fuzzy Model (TS method)

This model was proposed by Takagi, Sugeno and Kang in 1985. Format of this rule is given as-

If x is 'A' and y is 'B' Then z = f (x,y)

Here, AB are fuzzy sets in antecedents and z = f (x,y) is a crisp function in the consequent.

Fuzzy Inference Process

The fuzzy inference process under Takagi-Sugeno Fuzzy model(TS Method) works in the following ways:

Step 1: Fuzzifying the inputs- Here, the inputs of the system are made fuzzy.
Step 2: Applying the fuzzy operator- In this step, the fuzzy operators must be applied to get the output.

The rule format of Sugeno form is given as follows:

If 7=x and 9=y then output is z=ax+by+c
Finally, one can find out the emotions through this aforementioned model.
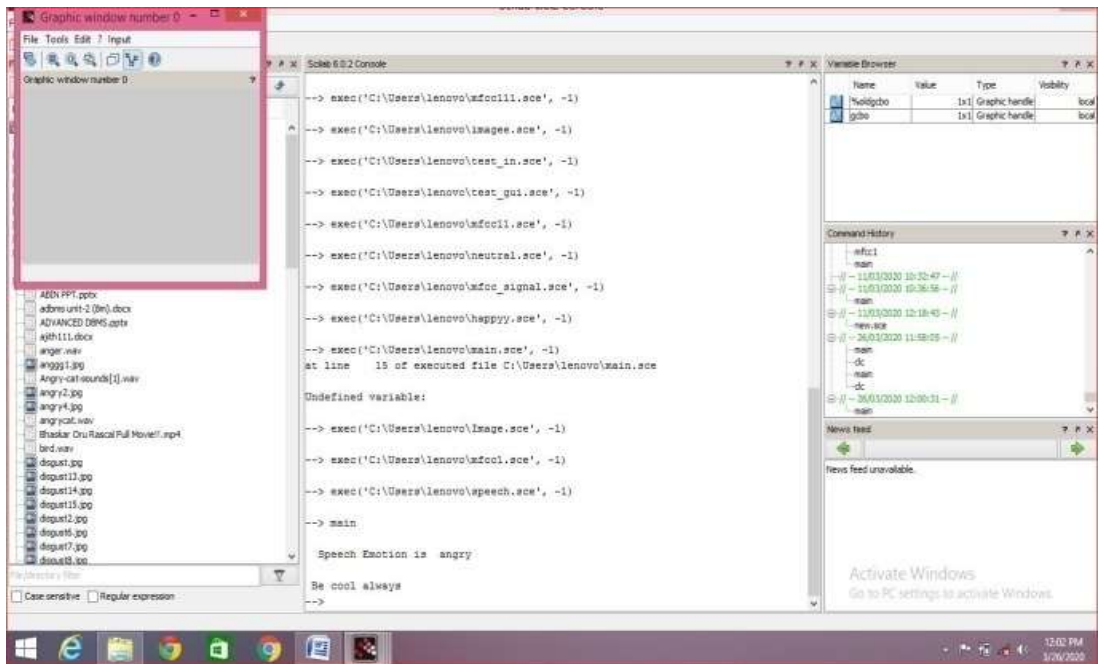
Results & Discussion

Fig.5 Action based on Speech and Image Based Emotion Recognition using TS Fuzzy Model

The above figure shows the combination of input speech signal and input image processing. In this process it will show the graphic window dialogue box in that window, input menu will be displayed. The speech input is converted into matrix and it is divided into frames, wherein the energy is calculated for each frame. Also, the energy and pitch manipulated for wave signal. The emotion is identified with the pitch range. Moreover, the average energy is manipulated from which pitch is calculated and emotion is recognized. The image will be pre-processed to remove the noise in it. The feature is extracted from image and using Support Vector Machine, the emotion is recognized and Figure 5 shows the result of the action suggested based on emotion identified using speech and image.

Suggestion & Conclusion

The results suggested that proposed system can reliably identify the single emotion from speech samples. The performance highly depends on emotional speech samples. Hence, it is quite necessary to take proper and correct speech samples. The performance has been observed good using the propose technique, but it takes a time in terms of execution. The future researchers shall work on time effectiveness. Another future enhancement is that it can be applied for bigger set of emotions i.e., positive or negative and can be implemented by other classification algorithm. The proposed scheme presented an approach to recognize the emotion from the human

speech and face. This approach has been implemented by neural network. This research work focused on the feature extraction method that is useful in the emotion recognition through speech signal, wherein for the purpose of feature extraction, Mel Frequency Cepstrum Coefficient (MFCC) has been used. Hence, to achieve the good extraction of the feature, high pass filter is designed. The high pass filter reduces noise from the signal and helps to extract better feature rather than other filters. Furthermore, to achieve the better performance the neural network is used for training. Moreover, using high pass filter before the feature extraction and neural network for the classification gives the higher accuracy.

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