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## Editorial.....

It is heartening to note that our journal is able to sustain the enthusiasm and covering various facets of knowledge. It is our hope that IJMER would continue to live up to its fullest expectations savoring the thoughts of the intellectuals associated with its functioning. Our progress is steady and we are in a position now to receive evaluate and publish as many articles as we can. The response from the academicians and scholars is excellent and we are proud to acknowledge this stimulating aspect.

The writers with their rich research experience in the academic fields are contributing excellently and making IJMER march to progress as envisaged. The interdisciplinary topics bring in a spirit of immense participation enabling us to understand the relations in the growing competitive world. Our endeavour will be to keep IJMER as a perfect tool in making all its participants to work to unity with their thoughts and action.

The Editor thanks one and all for their input towards the growth of the **Knowledge Based Society**. All of us together are making continues efforts to make our predictions true in making IJMER, a Journal of Repute

**Dr.K.Victor Babu**  
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## ICT ENABLED SYSTEMS AND THEIR SERVICES IN AGRICULTURAL EXTENSION

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### **Abstract**

Agriculture is backbone of Indian economy. Agriculture provides principal means of livelihood to most of the Indian population. Indian rural farmers still suffer from the absence of right information at the required time. This paper describes the importance of ICT enabled systems and their services in agricultural development. It also explains some measured constraints in terms of agricultural benefits cum technological outcome of ICT enabled systems. The adoption of ICT enabled systems are most useful in India to acquire extensive information, focusing particularly on those rural areas that are currently least affected by the latest advances in the digital revolution.

**Keywords:** ICT, Communication, adoption of ICT, revolution.

### **1) Introduction**

Agriculture is the key sector of the Indian economy. It provides principal means of livelihood to most of Indian population. Agriculture sector is witnessing radical changes and challenges at national and global level. Now a day's Indian agriculture is faced with the challenge of providing adequate and sustained livelihoods to more than hundred million farm families spread across the country, under changing social, economic and environmental conditions. Small scale farming not only limits efficiency but also effectiveness due to the limited scope for capital and technological inputs.

Agricultural production has evolved into a complex business requiring the accumulation and integration of knowledge and information from many diverse sources. In order to remain competitive, the farmer often relies on agricultural specialists and advisors who provide information for decision making. Agriculture problems requires information and application of knowledge from different interacting fields of science and



engineering to make a suitable decision making that in turn depends on interplay of these data and knowledge. This needs agricultural specializations and technical awareness in experts to help the farmers in decision making.

Information is an essential ingredient in agricultural development programs but farmers rarely felt the impact of agricultural innovations because it is poorly disseminated. Farmers are simply out of reach from useful agricultural information because of either inadequate or lack of appropriate agricultural information system or technologies to access relevant information. Agricultural information and communication indicates limited impact because of the ways used in dissemination and access to this information by farmers. The technology generation and development plans do not sufficiently address actual needs of farmers.

Farmers facing many challenges in regards to information dissemination and accessibility to help them in increased agricultural knowledge. These include lack of information and communication facilities, poor information delivery channels, low use and adoption of existing information, low use of existing technologies. However these challenges have caused a big block to farmer's agricultural awareness. Hence rural farmers and their complex systems pose special research challenges and demand appropriate technologies to aid them in decision making. It is becoming evident that the success of any agricultural development programme requires a well organized and functional integrated information delivery system.

Whenever new knowledge is created from the research centre, it is difficult to transfer the expert's knowledge to farmers and extension agents because this needs huge budget, large number of experts to train farmers and extension agents to share the knowledge created from the research centre. Expert's knowledge is being concentrated in research centers but due to lack of information and communication sources, rural areas neither have direct access to that knowledge nor do the instruments take advantage of existing data.

Over the last two decades, India emerged as the most preferred destination for outsourcing of ICT services. The vibrant ICT industry is contributing information about latest technology agricultural sector. However, Indian rural agriculture of the economy is lagging behind in utilizing Information Communication Technology. ICT in agriculture is



an emerging field focusing on the enhancement of agricultural and rural development in India. It involves application of innovative ways to use ICT in the rural domain. It can provide with accurate information necessary for the farmers which facilitates better agricultural output. ICT enabled services are diversely changed with agricultural extensions. There are many primary and auxiliary aspects of agricultural extension for which farmers are depending. Farmers are changing their trends in disseminating information from many diverse sources. Farmers from rural places are thinking about instant help available on different information disseminating sources. However, there are many things because of which sufficient and timely information is not reached up to farmers.

In the present article an attempt is made to represent various information dissemination sources from which farmers disseminating the information. The hindrances to adopt knowledge of experts at farmers level through these sources. This paper reports on the availability, use and information seeking behaviour of a farming community with specific reference to Information and Communication Technologies (ICTs).

## **2) ICT Enabled Information Dissemination Sources and their Services**

Now a day's many information dissemination sources are available such as Print Media or Printed Manuals, Television, Radio, Internet, Agricultural Colleges, Krishi Vigyan Kendras, Kisan Call Centre, Mobile Services, Native Farmers, Agricultural Consultants and Experts to provide help to the farmers in all the aspects. These sources are helpful to provide various services and applications associated with them, such as broadcasting, telecasting, videoconferencing and distance learning etc.

Extension is the most important instrument for agricultural development; hence, extension reforms scheme may be up-scaled at the farmer's level. Since all the districts have Krishi Vigyan Kendras (KVKs), generally one per district, the mandate and functioning of KVKs not clearly defined. They are not able to play a key role in support of the Mass Media and ICT initiatives at root farmer's level.[18]

Radio programs are popularly used in communicating agricultural information but such type of information is not always available and



sufficient. The Community Radio Centre's may be established at each KVK so as to provide location specific information to the farming community.

Many agricultural television programs are available on TV channels but they do not provide information as per the requirement of farmers. It is not possible to implement the solutions directly given through these channels. Farmers may not receive complete information about particular problem. A dedicated TV channel for agriculture may be launched, if feasible.

Online help for concise information is available anywhere and anytime on internet where comparative searching is possible. It provides help in various formats like Text, Image, Audio, Video files. But lack of technologies and resources rural farmers are remains out of loop from these help. Access of this type of information is expensive for rural farmers. ICT attempts by public, private and NGOs in the field of agriculture and related sectors need to be converged and shared among them.

Printed media such as news papers or manuals are in use for agricultural information in minimum cost but updated information is required to enhance knowledge of farmers. Progressive farmers from different commodity groups may be identified, trained by the use of most helpful information dissemination systems at root level. They may be recognized as resource persons in extension activities, further promoting the farmer-to-farmer extension. Wide publicity is required for popularizing Kisan Call Centers among farming community and other stakeholders.

ICT in agriculture is an emerging field focusing on the enhancement of agricultural and rural development in India. It involves application of innovative ways to use ICT in the rural domain. It can provide with accurate information necessary for the farmers which facilitates better agricultural output.

### **3) Literature Survey on ICT in Agriculture**

In India, ICT for rural agricultural development has a huge potential. Various NGOs, private organizations, corporate bodies and governmental organizations have generally taken the initiatives to extend the growth in agricultural and rural development. Learning from the ongoing projects should be taken into account while



formulating the strategy or action-plan for future for overall development of agriculture. From the perspective of agricultural field of rural area and information technology, ICTs can be seen as useful in improving linkages between research and extension systems. Agricultural extension brings information and new technologies to farming communities, allowing them to improve their production, incomes and standards of living. Extension has a major role in pointing the way to increasing the use of knowledge and information through its people orientation.

Leonard (1977) illustrate that, the rise in the demand for agricultural services, many variants of approaches, models and methods have been evolved to connect researchers, extension agents, producers and consumers.

Buford (1990) pointed out, agricultural extension depends to a large extent on information exchange between and among farmers on the one hand, and a broad range of other actors on the other hand.

Richardson (1997) found that, ICT is necessary for accessing required information and knowledge in strengthening the more complex and time-urgent pathways of information and knowledge-sharing on which agricultural innovations depend.

Roller and Waverman (2001), Waverman, Meschi, and Fuss (2005) states that, ICTs have a demonstrably positive effect on income growth in developing and developed countries.

Rivera, Qamar, Van Crowder (2001), Birner and Anderson (2007), Anderson (2007) and Raabe (2008) states that, India has been experiencing major changes in agricultural extension system since the 1990s.

Anderson and Feder (2004) found that, In the T&V and FFS systems, extension workers passed information to selected contact farmers who shared information with other farmers.

Davison et al (2005) conclude that, ICT can help in enabling rural development workers to gather, store, retrieve, adapt, localize and disseminate a broad range of information needed by rural families.



Lio and Liu (2006) found that, in rural areas, ICTs can raise incomes by increasing agricultural productivity and introducing income channels other than traditional farm jobs.

Jensen (2007) and Goyal (2010) states that, ICTs for agriculture improve incomes and quality of life among the rural poor

Anandajayasekeram et al. (2008) find out that, agricultural service delivery in developing countries started with production-oriented limited extension services for export crops. The attention was diverted in the fifties to food production and improved farming techniques.

Fraol Lemma (September 2009) find out that, ICT plays important role in the agricultural knowledge management systems in BURE, GOMA, ALABA AND ALAMATA

Asenso Okyere and Davis (2009) found that, the Integrated Agricultural Research for Development concept puts farmers and users at the center of innovative practices.

P. Adhigurua, P.S. BIRTHALB and B. Ganesh Kumar (2009) found that, for vital information on animal healthcare, farmers depend largely on neighborhood sources (other farmers) than extension workers.

Claire J. Glendenning, Suresh Babu, Kwadwo Asenso-Okyere (2010) concludes that, the organizational innovation presented by agriclincs in integrating the provision of several services to farmers.

Anwasha Banerjee (December 2011) pointed out, ICT is the future of Indian Agro economy too; if it needs to be all round success more & more initiatives need to be taken and have to make it work in grass root level.

Deven J. Patel and Kapil K. Shukla (December 2014) stated that, ICT plays important role in information dissemination in India, however there are many challenges opportunities for ICT Initiatives.

#### **4) Some ICT initiatives for rural agricultural development in India:**

- Application of Satellite Communication for Training Field Extension Workers in Rural Areas (Indian Space Research Organisation).
- Agrisnet



- Automated Milk Collection Centres of Amul dairy cooperatives (Gujarat).
- Computer-Aided Online Registration Department (Andhra Pradesh).
- Gyandoot project (Madhya Pradesh).
- IFFCO Kisan Sanchar Limited
- Information Village project of the M S Swaminathan Research Foundation (MSSRF) (Pondicherry).
- iKisan project of the Nagarjuna group of companies (Andhra Pradesh).
- IT Mediated Agri. Extension
- ITC –eChaupal
- Land Record Computerisation (Bhoomi) (Karnataka).
- Knowledge Network for Grass Root Innovations – Society for Research and Initiatives (SRISTI) (Gujarat).
- Kissan Soochna Kendra
- Kissan Call Center
- Kisan Kerala
- Famers Call Center (FCC)
- Online Marketing and CAD in Northern Karnataka (Karnataka).
- Soochna Se Samadhan (Lifeline)
- Warana Wired Village project (Maharashtra).

Government, non- government organizations and corporate have initiated the above ICT initiatives in agriculture in India. Many of them are funded and run by initiator agencies but few of them have been sustained on their own. [8]

### **5) Observations on the ICT Initiatives**

The following are the some observations on the ICT initiatives worked for delivery of information to the farmers:



### **5.1) Mobile based initiative**

- Information should be provided through both voice and text SMS (in regional language) as farmers are more comfortable with voice mode than in text mode because of the problems of language barriers and levels of literacy.
- Farmers need to be registered with their farm details so that personalized care can be provided to each farm.
- In most of the cases the information provided is one way i.e. from top to bottom. It should include the two way communication system.
- Information should be provided as per the requirement of the farmers in the local language, in convenient mode and in the convenient time.
- An application to send the images / videos through mobile phone may also be developed, so that the farmer can also send the images/videos as and when required.
- Dissemination of information through mobile alone is not sufficient, it should be augmented with other extension services e.g. follow-up visits by the crop experts coupled with quality farm inputs.

### **5.2) Internet based initiative**

- Illiteracy among the farmers is one of the major drawbacks for accessing the information through internet. Regular training and orientation is necessary for farmers regarding usage of internet technology.
- Websites / portals are not updated regularly and also the information available is generic nature. The portals should be user friendly and the information should be in regional languages and location specific.
- More agriculture based services have to be developed / implemented to run on the available internet based kiosks for the farming community. The centers should be set up in rural areas rather than urban centers.
- A provision should be given to the farmers to consult directly with the experts as it would be more beneficial for them as they can get immediate solutions for their critical problems.
- The internet kiosk may also act as a one stop shop for the farmers; they should provide linkages with all the service providers i.e.



financial service, input dealers, output procurement agencies, warehousing agencies etc.

### **5.3) Community Radio Station (CRS)**

- Radio Stations provide one way communication, thus farmers cannot ask for the immediate solutions to their specific problems.
- The major challenges in CRS are competition with the other commercial stations, limited time of broadcasting, and repetition of the programs and sustainability of the community radio stations.
- CRS has a limited frequency, thus to reach larger people, the content may need to be recorded and sold / distributed in CDs.
- Coordination is required with local government agencies, agriculture universities and research centers involved in agriculture development to provide need specific programmes on agriculture to the beneficiaries
- More promotional and awareness activities are required to increase awareness followed by the participation of the progressive farmers.
- More involvement of community is required in identification of issues and need of the area.

### **5.4) Call Centre / IVRS**

- General information is provided instead of area specific information.
- Lack of background information and farmer's database (farm and farming details).
- The feedback mechanism requires to be more effective so that it ensures quality..This will in turn ensure effectiveness of the responses farmers get from the experts.
- Poor feedback mechanism and quality control system.
- The mode of information should include voice and image, video and text mode, this will enable the farmers and expert to communicate & understand the exact problems in specific cases.
- Lack of close monitoring and field visit by the agriculture experts. Number of Scientists or experts should be increased and they should visit the field at regular intervals.[8]

### **6) ICT Portals Used in India for Agricultural Information Dissemination:**

- **Digitalmandi (ITC promoted)-** It offers the farmers all the information they need to enhance farm productivity by using better



technology, improve farm produce price realization and cut transaction costs.[16]

- **Agriwatch**-This website provides the SMS facility for message alerts on prices of particular commodities.
- **Tarahaat (Graphics)**-Tarahaat utilizes fine graphics and animations to convey general introductory information about their services.
- Krishiworld.net
- toeholdindia.com
- Agriwatch.com
- ITCs Soyachoupal.com
- Acquachoupal.com
- Plantersnet.com.

## 7) Benefits to the Farmers from ICT Enabled Services

Farmers from Rural India will be benefited in various terms of the agricultural field. Following are some measured constraints in terms of agricultural benefits cum technological outcome of ICT enabled services.[13]

- Cultivations of proper crops at right time.
- Effective forecasting on the basis of continuous ICT access patterns.
- Accurate policy decision can be done.
- Farmers will be informed of the accurate current prices and the demands of the products.
- It is vital that the local information to be relayed to the farmers must be simplified by the access to agriculture information.
- Increasing the level of access of farmers is very vital in order to simplify contact between the sellers and the buyers, to publicize agricultural exports, facilitate online trading, and increase the awareness of producers on potential market opportunities including consumer and price trends by the access to national and international markets.
- The flow of information regarding new techniques in production would open up new opportunities to farmers by documenting and sharing their experiences to increase production efficiency.



- The flow of information from the farmers to policy makers, a favorable policy on development and sustainable growth of the agriculture sector will be achieved.
- Question-and-answer services where experts respond to queries on specialised subjects ICT services to block and district-level developmental officials for greater efficiency in delivering services for overall agricultural development.
- Up-to-date information, supplied to farmers as early as possible, about subjects such as packages of practices, market information, weather forecasting, input supplies, credit availability, etc.
- Provision of awareness at right time about disease/pest problems, information regarding rural development programmes and crop insurances, postharvest technology, etc.
- Services providing information to farmers regarding farm business and management.
- Tele-services for farmers by wireless communication.
- Making the latest information available to extend and forecast by obtaining the feedback.
- Instant information will be made available on mobile phones.

### **8) Challenges with ICT for Indian Agricultural Development**

There is a requirement for an integrated approach which should cater to the problems of farmers in using ICT applications in agriculture such as accessibility, acceptability, simplicity, timely & useful information in simple local languages. It is from the choice of inputs in the farming system to marketing of the farm products.[7]

- There is a need to cater to the farmer queries in multimedia mode i.e. voice mode (i.e. in local language) along with text, image and video.
- Requirement of farmer friendly and simple interfaces to access information and advisory services in effective manner preferably through smart phones.
- Need is to develop an interactive system so that the communication can be possible from farmers to expert and vice versa.
- Requirement for interlinking of location specific information from various service providers to cater the specific needs of the farmers



- Requirement for interlinking of location specific information from various service providers to cater to the specific needs of the farmers
- Requirement of maintaining farmer's database with their farming details, by referring to it an expert can provide appropriate solution to concerned farmer's query.
- Requirement of expert support system which has user friendly interfaces and reference content for fast and proactive delivery of advices. The system should also facilitate an expert to be virtually available by giving him any time anywhere access.

## 9) Conclusion

This paper point out that, ICT enabled systems works as information dissemination sources for the farmers. There are many ICT initiatives and portals which makes information available in different formats. Generally farmers need timely information through human interface that are local and actively solved problems by participatory communication methods. It is essential to have interactive systems so that communication can possible in both ways. The information requirement from farmers also differs from one area to another, which is rarely addressed by existing information dissemination sources. There is need to have integrated and interlinking information systems. Many farmers are facing problem of illiteracy or language because of which they unable to adopt available information. Hence, there is need to have farmer friendly and advisory systems. The relevant information that is available at the expert or research level remains inaccessible by farmers. There is gap between higher level expert's knowledge and farmers. Hence, to adopt knowledge of experts at farmers level there is need knowledge based expert systems.

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## CLIMATE CHANGE IN INDIA- CONSTITUTIONAL AND STATUTORY PROTECTIONS TO CITIZENS

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Climate change is a major challenge for developing countries like India that face large climate variability and are exposed to enhanced risks from climate change. Climate change will also significantly impact the economic growth and social development of India, where eradication of poverty is the first and overriding priority. It is for this reason that India has a huge stake in the multilateral climate change negotiations that are taking place under the purview of United Nations Framework Convention on Climate Change (UNFCCC).

No single country causes the problem; no single country can cure it, only by collective community action can that tragedy be avoided.<sup>1</sup> India is also not immune from the impact of global warming and climate change. Any sharp rise in sea level could have a considerable impact on India. The United Nations Environment Programme included India among a the 27 countries that are most vulnerable to a sea level rise.<sup>2</sup>

Unfortunately, India is among the countries that will suffer the most serious consequences as a result of global warming. The impact is already being felt.<sup>3</sup> In India, climate change could represent additional pressure on ecological and socio-economic systems that are already under stress due to rapid urbanization, industrialization, and economic development. With its huge and growing population, a 7500-km long densely-populated and low-lying coastline, and an economy that is closely tied to its natural resource base, India is considerably vulnerable to the impacts of climate change.



Increases in temperature and seasonal variability in precipitation are expected to result in more rapid recession of Himalayan glaciers. In fact, the Gangotri glacier is already retreating at a rate of 30 meters a year. According to the UN report, in the Himalayas, rapidly melting glaciers will cause floods followed by a dip in river flow. The decrease could see the Gangetic plains turn infertile. Cholera and malaria would increase because of floods. Cereal yields in such Asia could drop by 30 per cent by 2050, devastating an agriculture-led rural economy like India. Food security and loss of livelihood along with cultivable land is a nightmarish scenario.

The country is extremely vulnerable to the possible impact of climate change, especially sea-level rise and shifts in monsoon cycles, because agriculture contributes approximately 30 percent to the gross domestic product and employs about two-thirds of the labor force.<sup>4</sup>

Thus many nations including India have understood the importance of environmental law. At first the environmental law focused attention towards the punitive aspects only. Gradually the state realized that prevention of environmental degradation and pollution is more important than punishing the persons for causing pollution. Thus the legal objective has changed from punitive to preventive. Here comes the importance of the preventive and protective legislations.<sup>5</sup>

Thus, there is a need of an effective response to curb global warming by evolving norms and establishing institutions to take strategic steps to mitigate global warming in India. To address these environmental challenges in coordination with the state governments, the central government has established an environmental legal and institutional system to meet these challenges within overall framework of India's development agenda and international principles and norms,



## **Pre Constitutional era**

The history of the evolution of law in relation to pollution and other environment problems can be traced to the ancient period. From the Vedas, Upanishads, Smritis and other ancient literatures we find that man lived in incomplete harmony with nature. From the ancient scriptures of Hindu religion one learns that the people gave so much importance to trees, plants, wild lives and other things of nature that they developed a long tradition of protecting and worshiping nature. Environmental ethics has always formed an inherent part of Indian religious precepts and philosophy.<sup>6</sup>

## **Law of Torts**

The law of torts is largely uncodified and also based on accepted principles. Thus the common law principles including nuisance, negligence, trespass and strict liability are the oldest form of remedies to abate the hazards of pollution. In India the law of torts has been generally followed to provide equity, justice and good conscience. The Supreme court has evolved the principle of absolute liability in addition to the above traditional categories as it felt that the rule of strict liability laid down in<sup>8</sup> was no longer suitable in the prevailing socio-economic conditions of the country.<sup>9</sup>

## **Early Legislations**

The Shore Nuisance (Bombay-Kalova) Act, 1893 was enacted to check wastes and marine water pollution. The Oriental Gas Company Act, 1857 and the Bengal Smoke Nuisance Act, 1905 were enacted to prevent or reduce atmospheric pollution in and around Calcutta. The Bombay Smoke Nuisance Act, 1912 was passed to check smoke nuisance in the Bombay area. For preservation of forests, the Cattle Trespass Act 1871 and Indian Forest Act 1927 were passed. The Indian Easement Act of 1882 guaranteed property rights of riparian owners against “unreasonable” pollution by upstream users.



## **The Indian Penal Code, 1860.**

The Indian Penal Code 1860, enacted during the British rule, contains one chapter (chapter XIV) on offences affecting public health, safety, convenience, decency and morals. It deals with offences affecting public health, safety and conveyance, which covered aspects like water, air and noise pollution. Section 268 covers public nuisance. It defines public nuisance as any act or an illegal omission which causes any common injury, danger, or annoyance to the public or to the people in general who dwell or occupy property in the vicinity, or which must necessarily cause injury, obstruction, danger or annoyance to persons who may have occasion to use any public right. Section 269 and 272 deal with adulteration of food or drink for sale and adulteration of drugs respectively, Section 277 lays down that, whoever, voluntarily corrupts or fouls the water of any public spring or reservoir, so as to render it less fit for the purpose for which it is ordinarily used shall be punished with imprisonment for a term which may extend to 3 months, or with a fine which may extend to Rs. 500, or with both. Section 278 lays down that whoever voluntarily vitiates the atmosphere so as to make it noxious to the health of persons in dwelling or carrying on business in the neighborhood or passing along a public way shall be punished with fine which may extend to Rs. 500. Sections 284, 285 and 286 deal with negligent conduct with respect to poisonous substances, combustible matter and explosive substances. Section 428 and 429 cover mischief to animals.

Other concerned provisions are a "negligent act likely to spread infection or diseases dangerous to life"<sup>10</sup> and making atmosphere noxious to health. Thus, even the pre-constitutional statutes like Indian Penal Code 1860 and Code of Criminal Procedure, 1973 and the criminal sanctions contained in specific environmental legislation and municipal Acts contain provisions for criminal aspects relating to environment.



## **The Indian Forest Act, 1927.**

Although it embodies the colonial policies of the pre-independence era, the Forest Act of 1927 remains in force. This Act consolidates, with minor changes, the provisions of the Indian Forest

The 1927 Act deals with four categories off forest, namely, reserved forests, village forests, protected forests, and non-government (private) forests. A state may declare forestlands or waste lands as reserved forests, and may sell the produce from these forests. Any unauthorized felling of trees, quarrying, grazing and hunting in received forests is punishable with a fine or imprisonment, or both.<sup>11</sup> Such initiatives help reduce pollution. Thus, various legislative measures were taken during the British period for prevention of pollution and for conservation of natural resources.

## **Constitution and Environment Protection**

The post Independence era witnessed a lot of changes in the policies of the government with respect to environment protection especially after the framing of the Constitution. The constitutional law has a seminal role to play in the protection and preservation of environment. In fact the space for environment-related legislation in the constitution is an outcome of the human urge for development with a social face.<sup>12</sup>

Inspite of such a rich reverence shown to the earth and its environment, as depicted in the ancient Indian scriptures, the Constitution of India, as enacted and adopted in 1949, hardly averred to natural environment of earth and its vitality for human health. The makers of the Constitution did not appear to be concerned in this regard so as to give a constitutional mandate for preservation and protection of the natural environment. It did not contain any specific provisions on environment and even the world environment did not find a place in the Constitution but there were certain provisions which



to a great extent had direct bearing on the environment such as improvement of public health,<sup>13</sup> organization of agricultural and animal husbandry on modern and scientific lines<sup>14</sup> and protection of natural monuments from spoliation,

disfigurement etc.<sup>15</sup> The provision contained in Article 47 is more important as it provides that the state shall regard the raising of the level of nutrition and the standard of living of its people and improvement of public health as among its primary duties. Protection and improvement of environment is inherently included in the improvement of public health because without it public health cannot be assured. This clearly reflects that the framers of our constitution were very much conscious about the environmental concern.

Many countries have engrafted environmentalism into their basic constitutional laws. India by the 42<sup>nd</sup> Constitutional Amendment, 1976 enjoined the State as well as citizens to express solidarity and compassion to biotic and abiotic entities. The constitutionalism and environmentalism inter woven strive to achieve to said goals through superior as well as subordinate legislations.

The UN Conference on Human Environment held at Stockholm in 1972 exerted major influence on environmental legislations in India. A National Committee on Environmental Planning and Coordination (NCEPC) was set up in the department of Science and Technology in 1972 to make necessary preparations for the Conference. The Government of India took a number of steps to implement the decisions taken at the conference by means of amendments to the Constitution, new legislations relating a to environmental protection and creation of institutions for implementing the legislations. The Constitution of India was amended by the 42<sup>nd</sup> constitutional amendment and the subject of “ecology and environment” was incorporated for the first through Article 48A and 5 A (g)<sup>16</sup>



Thus, India took a bold step to include environmental protection rights and duties in its Constitution. By incorporating Article 48A in part IV of the constitution, which contains the directive principles of state policy, the state has been given the constitutional mandate to protect And improve the environment and to safeguard the forest and wildlife of the country. Since the principles laid down in the part IV of the Constitution are fundamental in the governance of the country, therefore it has been now the constitutional duty of state to deal with the matters relating to environment, forest and wildlife of the country.

### **The Preamble**

The Preamble contains certain basis values and philosophies that India guarantees to its citizens and strives to achieve as a nation. The Preamble states inter alia that social, economic and political justice will be secured for all citizens and that liberty and equality will be promoted. These values are the cornerstone of true democracy and are universal in nature. Every nation strives to achieve them.<sup>17</sup>

The Preamble opens with the words, 'We, the people of India' which indicates the source from which the Constitution comes. i.e. the people of India. Thus, we, the people are solely responsible for constituting India into a "sovereign, Socialistic, and Secular, Democratic, republic"<sup>18</sup> and in this we find a glimpse of the concern for the society as in such a society the state pays more attention to the social problems than any individual problems. Environmental pollution which has emerged as one of the biggest social problems is being regarded as a real problem affecting the society at large and thus the State is under an obligation to fulfill basic aim of socialism, i.e., to provide decent standard of living to all which can be possible with a pollution free environment.



Environment as a subject, environment as a concern and environment as a part of socio-economic-political structure in the country seems to have taken, of. In fact it has entered the structure in such a way that no intellectual, political or even academic discourse is complete without it. Thus, when we talk of social, economic or political justice we must include environment, as it has become a part of the social structure. The state, therefore, should endeavor to take all necessary steps to secure its citizens environmental justice.<sup>19</sup>

### **Fundamental Rights**

The fundamental rights are a necessary consequence of the declaration in the preamble to the constitution that the people of India having solemnly resolve to constitute India into a sovereign, democratic, republic. The framers of the Indian constitution visualized the great many difficulties in enunciating the fundamental rights in general terms and have left in the hands of the judiciary to interpret them.<sup>20</sup>

The Fundamental Rights in Part III and the positive mandates to the State in the form of Directive Principles in Part IV can be compared with the Universal Declaration of Human Rights (UDHR) and commonalities can be traced. While enjoining the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality, it imposes a solemn responsibility to protect and improve the environment for present and future generations. The Rio Declaration on Environment and Development 1992 provides that 'human beings are at the centre of concern for sustainable development and they are entitled to a healthy and productive life in harmony with nature. To promote environmentalism it calls for application and use of law as an essential means at local, national and global levels.

Through Article 21 does not explicitly mention environment, the Supreme Court<sup>21</sup> and the various High Courts of the country have given



a wider interpretation to the word “life” in this Article. According to the courts, the right of life includes the right to live in an environment congenial to human existence.

Thus, Right to life being the foremost human right implies the right to live without the deleterious invasion of pollution, environmental degradation and ecological imbalances. The Environment today should be of paramount legal importance and the focal agenda of modern socio-legal order. The legal system, therefore, is expected to instill environmentalism, deep ecological values and eco-centrism to bring about an equitable and sustainable socio-legal regime. However, the task is quite assiduous because scientific and technological developments have suppressed the harmony of creation.

### **Fundamental Duties**

The 42<sup>nd</sup> constitutional amendment did not confine the constitutional obligation to protect and improve environment only in the hands of the state but brought the obligation down to the level of the citizens also by incorporating Article 51 A(g) in a newly introduced part, namely part, IV-A of fundamental duties. This amendment is considered to be a revolution, as it was not Only first of its kind in constitutional history expressing concern for environment and its Protection, but it also accorded recognition to Buddhist and Gandhian environmental ethics, as Article 51 A (g) made it a fundamental duty for all the citizens of Indian not only to protect and improve the natural environment but also to have compassion for all living creatures. Another significant aspect of Articles 48 A and 51 A (g) is that the state and its citizens shall not only protect the environment but must also improve it.

Environmental protection is a fundamental duty of every citizen of this country under Article 51-A (g) of our Constitution which reads as follows: “It shall be the duty of every citizen of India to protect and



improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures”.

By the 42<sup>nd</sup> constitutional amendment the Constitution of India has become one of the very few constitutions in the world, which have enshrined a commitment for protection, and improvement of environment. One can now very emphatically assert that by raising the protection and improvement of environment to the status of constitutional law, the “third generation” human right which is very important not only from the individual point of view but also from the point of view of the community at large has got its due place in the national charter of India. It is submitted that by incorporating this third generation human right under directive principles of state policy and fundamental duties of citizens, an endeavor has been made to make enforcement of this right mandatory for both the state and its citizens. The constitutional duty entrusted upon the state to protect.

### **National Policies**

In addition to the Constitutional mandate, India has a number of national policies governing environmental management, including the National Policy on Pollution Abatement (NPPA, 1992) and the National Conservation Strategy and Policy Statement on Environment and Development (NCS/PSED, 1992). While these national policies are not judicially enforceable, they serve as guiding principles for the central and state governments to follow.

### **Conclusion**

The Constitutional scheme to protect and preserve the environment has been provided under Articles 21, 48A and 51-A(g) which includes fundamental right to have healthy and pollution free environment, constitutional obligation of the State and fundamental duty of all the citizens of India to protect and improve the natural environment. But the first question we have to ask ourselves is why



despite provisions in Indian Constitution providing for environment protection and many statutory provisions, the environment degradation continues. The main cause for environment degradation is lack of effective enforcement of various laws .there is also lack of proper, effective and timely enforcement of even orders passed by courts<sup>22</sup>. The task of environmental protection is difficult and complex in a country like India, which is still to travel long to usher in the industrial regime and is yet to tackle population problems of food, health and water. But every effort to deal with environmental problem has to be pin pointed and local and at the time cooperative and total.<sup>23</sup>

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## “मुद्राराक्षसनाटके सप्तप्रकृतयः” एकं परिशीलनम्

महन्ति राज्यलक्ष्मी, शोधार्थी  
संस्कृतविभागः, आन्ध्रविश्वविद्यालयः,  
विशाखपट्टणम् -9441015513.

### सप्तप्रकृतयः -

स्वाम्यमात्यजनपददुर्गकोशदण्डमित्राणि प्रकृतयः । प्रकृतिः - मूलम् राज्यस्थितेः यत्प्रधानं कारणं भवति सा प्रकृतिः । सा च सप्तरूपा । १) स्वामी - प्रभुः, २) अमात्यः - मन्त्री, ३) जनपदम् - पूर्वनिवासस्थानम्, ४) दुर्गः - आपत्काले स्वामिना आश्रयणीयो देशः, ५) दण्डः - सेनासम्पत्तिः शासनानुष्ठापनञ्च, ७) मित्रं - सहायकः सुहृत् इति सप्तानां प्रकृतीनां पृथक्लक्षणान्यपि भवन्ति । विशेषतः स्वाम्यमात्ययोः लक्षणानि इतरासां प्रकृतीनां सम्पादने हेतूनि भवन्ति । अतः तयोर्लक्षणमपि अर्थशास्त्रे विस्तरेण व्याख्यातम् ।

स्वामिनः लक्षणं तदगुणाश्च अर्थशास्त्रे विस्तरेण वर्णिताः । तत्र स्वामिसम्पत् - महाकुलीनः, दैवबुद्धि - सत्त्वसम्पन्नः, वृद्धदर्शी, धार्मिकः, सत्यवाक्, अविसंवादकः, कृतज्ञः, स्थूललक्षः, महोत्साहः, अदीर्घसूत्रः, शक्यसामन्तः, दृढबुद्धिः, अक्षुद्रपरिषक्तः, विनयकामः इत्याभिगामिका गुणाः ।

शुश्रूषाश्रवणग्रहणधारणविज्ञानोहापोहतत्वाभिनवेशाः प्रज्ञागुणाः, शौर्यममर्षः शीघ्रता, दाक्ष्यं चोत्साहगुणाः ।

वाग्मी, प्रगल्भः, स्मृतिमतिबलवान् उदग्रः, स्वग्रहः, कृतशिल्पः, अव्यसनः, दण्डनायी, उपकारापकारयोः दृष्टप्रतीकारी, ह्रीमान्, आपत्प्रकृत्योः विनियोक्ता, दीर्घदूरदर्शी,

देशकालपुरुषकारकार्यप्रधानः, सन्धिविक्रमत्यागसंयमपणपरच्छिद्रविभागी, संवृतः,  
अदीनाभिहास्यजिह्वाभुक्टीक्षणः, कामक्रोधलोभस्तम्भचापलोपताप पैशुन्यहीनः शुक्लः,  
स्मितोदग्राभिभाषी, वृद्धोपदेशाचारः इत्यात्मसम्पत् (अर्थशास्त्रम् - मण्डलयोनिः षष्ठमधिकरणम्,  
अ. १, पृ. ५३१ - ५३२)।

स्वामिनः लक्षणानि सर्वत्र मुद्राराक्षसे विस्तरेण वर्णितानि । तान्यपि लब्धमुदाहरणमनुसृत्य  
उदाह्रियन्ते ।

१. महाकुलीनः - महति कुले जातः महाकुलीनः । चन्द्रगुप्तः यद्यपि चाणक्येन  
वृषल इति बहुधा व्यवहृतः तथापि कुलीन एव । मातुः कुलादपि पितुः कुलमेव सन्ताने सङ्क्रान्तं  
भवति । अतोऽसौ जात्या क्षत्रिय एव ।

२. दैवबुद्धिसत्त्वसम्पन्नः - यश्च साध्यं कृत्यं सुलभं साधयति कदाचित् विषमेष्वपि  
दैवानुकुल्येन रक्षितो भवति स दैवसम्पन्न इति व्याख्याने स्पष्टम् (आन्ध्रव्याख्यानम्, पृ. ५३२) ।  
चन्द्रगुप्तस्य अनुकूलदैवत्वं स्वयं राक्षसेन अङ्गीकृतं नाटके सर्वत्र दृश्यते । यथा द्वितीयाङ्के  
राक्षसवाक्येषु -

इष्टात्मजः सपदि सान्वय एव देवः

शार्दूलपोतमिव यं परिपुष्य नष्टः ।

तस्यैव बुद्धिविशिस्वेन भिनन्नि मर्म

वर्मीभवेद्यदि न दैवममृश्यमानम् ॥ इति । (द्वितीयाङ्कः, श्लो. ८, पृ. १०९-

११०)

अत्र दैवं सर्वत्र आपत्सु चन्द्रगुप्तं कवचरूपेण स्थित्वा रक्षति इति स्पष्टं वर्णितम् । ये च  
विषप्रयोगे नियुक्ताः तैरेव ते घातिताः इत्यत्रापि दैवमेव कारणम् । एवं चन्द्रगुप्तस्य अनुकूलदैवत्वं

इतरत्रापि द्रष्टव्यम्(३/१५-१६) ।

३. वृद्धदर्शी - वृद्धान् पश्यति वृद्धदर्शी । इतरान्यपि सर्वाणि लक्षणानि तृतीयाङ्के स्पष्टं वर्णितानि । लक्षणान्तराणि चन्द्रगुप्तपात्रचित्रणे द्रष्टव्यानि ।

४. अमात्यः - अमात्यः मन्त्री सचिवः इति यद्यपि पर्यायतया व्यवहियन्ते तथापि अमात्यमन्त्रिणोः प्रवृत्तौ महान् भेदः । मन्त्रम् अस्य अस्तीति मन्त्री । मन्त्रिगुप्तालोचने इति धातोः मन्त्रिशब्दो निष्पन्नः । यः कार्यचिन्तने सहभाक् भवति स एव मन्त्री भवति । मतिः - आलोचनं मतेः कर्म मात्यं न विद्यते मात्यं येन सः अमात्यः । अमात्यः कार्यनिश्चये न मन्त्रणीयो भवति । अतः मन्त्री कार्यनिर्णायकः (Policy maker) अमात्यः कार्यनिर्वाहकः (Excutive) । तदुक्तं कौटिल्येन -

विभन्यामात्यविभवं देशकालौ च कर्ता च ।

अमात्याः सर्व एवैते ..... मन्त्रिणः ॥ (अ.शा., विनयाधिकारणम्, अमात्योत्पत्तिः, पृ. ३१)

अमात्यः शास्त्रावेत्ता, दृष्टकर्मफलः, भक्तिमान्, यथादिष्टकारी, विशेषकारी च भवेदिति अर्थशास्त्रे स्पष्टम् । यत्केवलशास्त्रज्ञः, अदृष्टकर्मफलः, आपदिविषीदेत अतः तममात्यं न कुर्यादिति बाहुदन्तीपुत्रनामकः आचार्यः प्राह । चाणक्यस्तु पितृपैतामहान्, दृष्टार्थान्, दण्डधरान्, शास्त्रविशारदान् च अमात्यं कुर्वीत इति अङ्गीकरोति । तत्र समग्रममात्यलक्षणं यथा -

जानपदः, अभिजातः, स्ववग्रहः, कृतशिल्पः, चक्षुष्मान्, प्राज्ञः, धारयिष्णुः, दक्षः, वाग्मी, प्रगल्भः, प्रतिपत्तिमान्, उत्साहप्रभावयुक्तः, क्लेशसहः, शुचिः, मैत्रः, दृढभक्तिः, शीलबलारोग्यसत्त्वसंयुक्तः, स्तम्भचापल्यवर्जितः, संप्रियः, वैराणामकर्तेति अमात्यसम्पत् । अतः पदार्थगुणहीनौ मध्यमावरौ (अ.शा., विनयाधिकारणम् प्रथममधिकारणम् अ.१, पृ. ३२) ।

एतान्यमात्यलक्षणानि चाणक्ये राक्षसे च विशेषतः वर्णितानि मुद्राराक्षसनाटके दृश्यन्ते ।

१. जानपदः - स्वदेशे जातः । चाणक्यः तस्मिन्नेव देशे जातः लब्धप्रतिष्ठश्च इति तत्कृत अग्रासनाभिलाषेणैव सिद्धम् । नन्दैः अग्रासनात् अपकृष्टः इत्येव तस्य कोपकारणमासीत् । प्रजाः अग्रासनादपकृष्टे चाणक्ये शोकतप्ताः बभूवुरिति तस्यैव वाक्येषु स्पष्टम् ।

शोचन्तोऽवनतैर्नराधिपभयात् धिक्शब्दगर्भैर्मुखै-

र्ममग्रयासनतोऽवकृष्टमवशं ये दृष्टवन्तः पुरा ।

ते पश्यन्ति तथैव सम्प्रति जनानन्दं मयासान्वयं

सिंहेनेव गजेन्द्रमद्रिशिखरात् सिंहासनात् पातिततम् ॥ ( )

यद्ययं परदेशे जातः न वा अपरिचितराजवंशः तदा चन्द्रगुप्तं वृषल इति न सम्बोधयेदेव ।

राक्षसीऽपि इति षष्ठाङ्के बहुधा वर्णितम् । जीर्णोद्याने स्वदेशस्थितिः राक्षसं दुःखाकरोति ।

शार्ङ्गज्याकृष्टिमुक्तप्रशिथिलकविकाप्रग्रहेणात्र देशे

देवेनाकारि चित्रं प्रजविततुरगं बाणमोक्षश्चलेषु ।

अस्यामुद्यानराजौ स्थितमिह कथितं राजभिस्तैर्विनेत्यं

सम्प्रत्यानोक्यमानाः कुसुमपुरभुवो भूयसा दुःखयन्ति ॥ (षष्ठाङ्कः - १/३७२)

२. अभिजातः - सत्कुलोद्भवः । चाणक्यः ब्राह्मणः अधिगतसर्वसास्त्रः रिपुणा राक्षसेनापि अभिनन्दितः । चाणक्यस्य शिखा ब्राह्मणकुलपताका । अत्र नाटके प्रधानभूमिकां वहति । एवं राक्षसोऽपि ब्राह्मण एव । सप्तमाङ्के सः श्वपाकस्पर्शात् जुगुप्सते । एवं स्वभार्या ब्राह्मणी इति वदति । अतः सः ब्राह्मण एव ।

३. स्ववग्रहः - प्रमादात् सुलभं निवर्तयितुं साध्यः । अमात्ये नाटके प्रमादो न दृष्टः ।

४. चक्षुष्मान् - शास्त्रचक्षुष्कः । चाणक्यः राक्षसश्च सर्वमर्थशास्त्रमनुसृत्यैव कार्यस्य कर्तारौ इति नाटके स्पष्टम् ।

५. प्राज्ञः - कालत्रयसहायिका मतिः प्रज्ञा । प्रज्ञास्यास्तीति प्राज्ञः । प्राज्ञः एव चाणक्यः आगामि कार्यं मनसि कृत्वा तदनुकूलं कार्यं करणीयञ्च निश्चिनोति । प्रथमाङ्के राक्षसं वशीकृत्य चन्द्रगुप्तमन्त्रिपदे स्थापयितुं कृतप्रतिज्ञः तत्र यत्ने स्वकृतं कर्म बहुधा विवृणोति । अस्य विस्तरः पुनरमात्यसम्पदि अग्रे द्रष्टव्यः । राक्षसमुद्रां लब्ध्वा सपदि लेखं कर्तुं निश्चिनोति । अनेन खलु लेखेन राक्षसो जेतव्य इति निश्चिनोति । तदैव चन्द्रगुप्तः पर्वतेश्वरपारलौकिकं कर्तुमिच्छन् आभरणानि योग्याय दातुम् इच्छति । मुद्रालाभः आभरणदानं, तेषां प्रतिग्रहः इत्येतेषां अन्वयं कृत्वा लेखमेकं कारयति । तत्फलञ्च पञ्चमाङ्के राक्षसमलयकेत्वोः भेदेन दृष्टं भवति ( ) । राक्षसोऽपि तल्लेखेनैव बद्धो भवति ।

मुद्रा तस्य कराङ्गुलिप्रणयिनी सिद्धार्थकस्तत्सुहृत्

तस्यैवापरलेख्यसूचितमिदं पत्रं प्रयोगाश्रयम् ।

सुव्यक्तं शकटेन भेदपटुभिः सन्धाय सार्द्धं परैः

भर्तृस्नेहपराङ्मुखेन कृपणं प्राणार्थिना चेष्टितम् ॥ (पञ्चमाङ्कः - श्लो. १५,

पृ. ३३८)

अतएव भागुरायणः चाणक्यं एवं श्लाघते -

एकमपि नीतिबीजं बहुफलतामेति यस्य तव ॥

राक्षसोऽपि प्रज्ञावानेनव । किन्तु असदाश्रयः राक्षसं व्यर्थयत्नं चकार । चाणक्यस्य नीतिस्तु योग्याश्रिता फलिता । सर्वमेतत् “द्रव्यं जिगीषुमधिगम्य .....” (७-१४) इति राक्षसनिर्वेदे स्पष्टमवगम्यते ।



६. धारयिष्णुः - धारणसमर्थः । ज्ञापकशक्तिसम्पन्नः कार्येषु अभिनिविष्टश्च ।

राक्षसग्रहणे चाणक्यस्य दक्षता अभिनिवेशश्च प्रथमाङ्के स्पष्टं वर्णितम् ।

तन्मयाऽप्यस्मिन्..... परिहास्यते । (पृ. ३६-४०)

राजा कार्यबाहुल्यात् करणीयम् अमात्यैः कारयति किन्तु सचिवायत्तसिद्धिः चन्द्रगुप्तः

सर्वं कार्यं चाणक्याधीनम् अकरोत् । अन्यानि च लक्षणानि ग्रन्थविस्तरभयात् नोदाह्रियन्ते ।



## THE PALLISWARA MUDAIYA MAHADEVA TEMPLE – KALAKADA, SPECIAL REFERENCE TO VIMANA

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### Introduction

The Palleswara mudaiya temple is located in Kalakada village on the right southern bank of the small river Satyavathi in Chittore District of Andhra Pradesh. This temple was probably constructed by vaidumba king palla who ruled some time about the middle of the 9<sup>th</sup> century A.D. And named after him as palliswara. The name palliswara occurs in an inscription of kulottunga I engraved on the adhithana. Kalakada was the capital of Vaidumbas who claimed themselves as kalakadapura varadhiswara. The temple comprises of a vimana, an ardha-mandapa and a maha-mandapa, all built continuously of stone and in a unified architectural pattern. The tritala vimana is square on its plan which maintained right upto sikhara which is curvilinear in its corners. It presents a beautiful plan of concentric squares from the base to the slab on the top of the sikhara, when one looks at it from above. There is a nandi in front of the temple. It is lightly damaged in the head region and so the left horn is not seen. Besides a thick band in the neck, there is an ornamental ribbed-band going round the body.<sup>1</sup>

### Art & Architecture

The temple of Pallisvara mudaiya mahadeva faces west. It comprises a vimana, an ardha-mandapa and a mahamandapa, all built continuously of stone and in a unified architectural pattern. The wall surface shows pilasters corresponding to the hara of the superstructure. There are altogether eight pilasters in the middle besides the two



cantoning pilasters at the corners. They are of square cross-section showing the kal, kalasa, tadi, rounded kumbha, padma, phalaka and oblong, bevelled corbels. The end corbels carry the vajana moulding on either side of the valabhi which is embellished with curved rafter ends. Closely following this is the drooping kapota with a pair of kudus against the hara components. The circle of these kudu arches is not complete but they have been designed in ogee shape, with the tip in the nature of a trefoil barge-board design. This kind of kudu is very interesting in its decorations. It rises over the kapota, the kantha and the prati-kapota. The haras over the prastara of the first tala, showing a series of miniature shrine consisting of kutas, koshtas or salas and panjaras or nidas, forms a parapet as it were for the second tala. Very interestingly the next tala is shown as being supported by a row of stunted pilasters on the bhatti giving an impression that there is a circumambulatory (pradakshinapatha) passage in the second tala which is not indeed the case. The hara of the first tala covering the pilasters almost upto the tadi comprises a sala in the centre, two panjaras, one on either side of the sala, and two kutas at either corners. The sikhara of kuta and the koshta show a kudu arch resembling a trefoil barge-board shape while the panjaras show a shovel-shaped finial end in their kudus. The pilasters of the first, second and third tala do not have any rearing lion as in the pilasters of the Pallava temples of the 7<sup>th</sup> -8<sup>th</sup> C A.D., but have beveled corbels of the Chola specimens of this district. The temple has been raised out of a single wall leaving no circumambulatory passage (alindra). The pradakshina-patha could not be shown in a functional manner but in an oblique manner, since the double wall system (i.e., antar- bhatti and bahya-bhatti) in the construction of the tiers of the vimana is not adopted here. Above the rafter frame work on the corbels rises the kapota carrying kudus which are lesser in number than in the kapota of the first tala. Similarly, the third tala is shorter than the second tala and is covered upto the kapota (?) of the pilasters by the hara of the second tala and rises upto



the kapota. The kuta, koshta and the panjara are embellished with kudu arches in their sikhara portion. Upon the kapota is the kantha succeeded by a pindi slab. The chaturasra griva and a broad, flat sikhara with nasikas in the four cardinal directions ending in shovel-shaped finials rises over the pindi slab. The stupi in the sikhara is not found.<sup>2</sup>

## **Vimana**

The tritala vimana is square (samachaturasra) on plan. The adhisthana of the vimana carries the mouldings of an upana, which is now covered by the soil debris, a high jagati, a tripatta-kumuda, kantha with kampa on either side and divided into pilasters (galapadas) at distant intervals, pattika and a bold prati upon which the bhitti rises. On the north-side of the vimana, the pattika carries a pranala, elliptical in section and having a semi-circular aperture cut at the bottom level of the wall. It does not show any simhamukha at the point of its inception. It is fitted into the level of the pattika unlike in some Chola specimens.

The main vimana has an ardhamandapa in the front which in turn is faced by a maha-mandapa. Both these mandapas have the same adhisthana component in continuation of the vimana. The wall space in the ardhamandapa is rather plain, without any specific decorations, other than an entrance door opening towards its west. Unlike the ardha-mandapa, the mahamandapa has a gavaksha window, one on either side, on the north and south walls. The other scheme of delineation of various organs upto the kapota resembles the main vimana. The entrance on the west of this structure seems to have been originally approached by a flight of steps. This is obviously due to the mouldings being shown with abrupt endings on either side of the doorway. The entrance door-way is flanked by pilasters embellished with an inner patra-lata design and the outer band of pushpa-sakha ornamentation. These two bands reach as far as the lintel slab at the

top. At the lower part of the joint in a square portion are carved the figures of dvarapalas and the figures of Ganga and Yamuna. Of these two female reliefs facing the entrance, the figure of Ganga is to the north of the entrance and that of Yamuna is to the south of the entrance. These figures standing in tribhahga pose are of diminutive character and are also stylistically depicted. The expression in the face is not distinguishable. The figures of dvarapalas facing away from the entrance shown to the right and left of the Ganga-Yamuna figures are four armed, standing with their legs crossed, the right leg placed on the ground, and the left leg resting upon the tip. The upper hands are in vismaya pose holding a naga by the tail. The lower right arm is in tarjani-hasta while the lower left arm rests on a club (gada). He wears a kirita projected on the side in a peculiar fashion, kundalas, haras, yajnopavita, udarabandha, girdle, etc. The lintel slab, carved with a lalatabimba in the centre, shows the figure of a Gaja-Lakshmi seated in centre flanked by a pair of female attendants on either side and other figures of male and female, probably, a group of musicians with various instruments in their hands. Besides the two attendants on her sides, six other figures are shown flanking them on either side.

The Gaja-Lakshmi shown seated on a padma-pitha has two arms, bent at elbow region and holding two lotuses against her shoulders. She has a karanda-makuta, heavy and rounded kundalas in the earlobes, hara, kuchabandha, being tied to the neck bands run over the shoulders one on either side, a channavira and bahuvalayas. Other intrinsic features in this figure could not be made out on account of its small dimension. Close to her are depicted two elephants, standing one on either side and holding the inverted pot (kalasa) of water with their raised trunks in the act of pouring water on the goddess. The female attendant towards the right of the goddess carries a fly-whisk (chamara) in her right hand and the pot of water in her left arm, while her counterpart on the left of the goddess

is a chamara-dharini standing with a chamara in her right arm and the left hand placed on thigh. The other female attendant, to the right of the figure carrying both the chamara and the pot of water is simply shown standing with her right hand placed across on the belly supporting the elbow of the left arm, whose fingers are kept under the chain.

The group on the proper right of this female attendant consists of standing figures, two-armed all of them, one of the hands in vismaya or in kati-hasta, while the other arm holds a weapon-like object. To the left of the chamara-dharini is a female attendant who has a pot of water in her left hand, being supported by her right arm holding the kalasa above. To her left is a group of musicians, with two standing drummers, two dancers, a seated figure playing on drum and a cymbal player at the extreme left.

The cella is square on plan, simple and plain. It has a socket hole in the centre of its floor. The ceiling of the cella shows a recession in the centre due to the placement of cross lintel slabs at the corner and on the sides. The facade of the ardhamandaapa has a pair of pilasters showing kattu and beveled corbels. The ceiling of the maha-mandapa has been divided into three longitudinal bays resulting in a navarangamandapa. The pillars supporting this structure in the centre are rather heavier than the pilasters of the preceding ardhamandapa but resembles them in all other respects.

There is a nandi in front of the temple. This recumbent bull is slightly damaged in the head region and so the left horn is not seen. The thick band on its neck is no doubt a feature seen in the Pallava images. The hump is shown with an involuted coil, curved inwards. The forelegs are bent and resting on the base. The hind-legs are not to be seen. Besides a thick band in the neck, there is an ornamental ribbed-band going round the body.<sup>3</sup>

## Inscriptions

Earliest inscription belongs to Bhuvanatrinetra Inrugeya Maharaja (C.972-1000 A.D) engraved on the outer faces of the wall of the mandapa on both the right and left sides of the entrance. Another inscription of Kulottunga I, (1119 A.D) refers to the temple of Pallisvara mudaiya Mahadeva engraved on the tiers of the basement (adhithana) stones of the temple).<sup>4</sup>

## Conclusion

The Vaidumbas are minor dynasty who hailed from Tamilnadu. Originally and settled in Rayalaseema and Karnataka region ruling the limited regions such as chittore, kadapa, kolar districts. . This temple is being maintained by ASI (Archaeological Survey of India).



Palliswara Mudaiya Mahadeva Temple. Kalakada



Palliswara Mudaiya Mahadeva Temple Vimana. Kalakada

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4. Ibid., Inscription-C, p.284-286

## జాతీయ సమైక్యతా సాధనలో మన పండుగలు - “మొహర్రం”

డాక్టర్ మండి అన్వర్ హుసేన్  
అసోసియేషన్ ప్రోఫెసర్ ఆఫ్ తెలుగు  
ఉస్మానియా కళాశాల  
కర్నూలు

భారతదేశం ఒక వైవిధ్య భరితమైన దేశం. 120 కోట్ల జనాభాతో ప్రపంచంలో రెండవస్థానంలో ఉంది. కాశ్మీర్ నుండి కన్యాకుమారి వరకూ భిన్నమైన భౌగోళిక శీతోష్ణ పరిస్థితులు, అనేక రకాలైన సంస్కృతి - సంప్రదాయాలు కలిసి ఉన్నాయి. ప్రపంచంలోని అన్ని ప్రధాన మతాలు, అనేక రకాలైన ఆహారపు అలవాట్లు సంస్కృతి - సంప్రదాయాలు అవరించే ప్రజలు ఉన్నారు. దాదాపు 1650 భాషలు వివిధ మాండలికాలు ఇక్కడి ప్రజలు వినియోగిస్తున్నారు. అధికార భాషలుగా 18 భాషలను గుర్తించడం జరిగింది.

ఇన్ని రకాలైన వైరుధ్యాలు ఉన్నప్పటికీ ‘భిన్నత్వంలో ఏకత్వం’ అనే సూత్రాన్ని అవలంబిస్తూ భారతీయులుగా ఒక్క త్రాటిపై నడుస్తున్నారు. అందరిని కలుపుతున్న సిద్ధాంతమే జాతీయ సమైక్యత.

“భౌతిక, సాంఘిక రీతుల్లో, భాషల్లో, మతాలలో, సంప్రదాయంలో ఎటు చూసినా వైవిధ్యం, భిన్నత్వమే. కాని అదుగున అంతర్లీనంగా ప్రవహిస్తున్న ఒక సమైక్యతా జీవన విధానం హిమాలయం నుంచి కేవలమరిన్ వరకూ గోచరిస్తుంది - సర్ హెర్బర్ట్ రైస్

దాదాపు ఇదే అభిప్రాయాన్ని డాక్టర్ వి.వి.స్మిత్ కూడా తెలిపారు.

భారతదేశంలో సూఫీతత్వము, భక్తి మార్గం వంటి సిద్ధాంతాలు కూడా ప్రజలలో ఉదారస్వభావాన్ని పెంపొందించడానికి కృషి చేశాయి. ఆంగ్లేయుల్లో భారతీయ సంస్కృతిని విచ్ఛిన్నం చేస్తూ విభజించి పాలించు అనే సిద్ధాంతాన్ని అవలంబించి నవ్వుటికి భారత స్వాతంత్ర్య ఉద్యమంలో ప్రజలందరూ ఒకే భావాన్ని కలిగి ఉండి సమైక్యతను చాటుకుంటూ విజయాన్ని సాధించారు. స్వాతంత్ర్యానంతరం దేశ విభజన ఒక సవాలును నిలిపింది. ఈ సమయంలో జాతీయ సమైక్యతా భావాన్ని పెంపొందించ వలసిన అవశ్యకత మరింత పెరిగింది.

మొహర్రం పూర్వ చరిత్ర : “మొహర్రం” ఇస్లాం ‘హిజరీ’ క్యాలెండరు లోని మొదటి మాసపు పేరు. దీనికి నిషేధించబడినది మరియు మూర్ఖపు పట్టుదల అని అర్థాలుకలవు. తర్వాతి కాలంలో శోకము, దుఃఖము అను అర్థంలో స్థిరపడింది. ఏమైనప్పటికీ ‘మొహర్రం’ను ముస్లింలపండుగలైన రంజాన్, ఇద్రీద్ లకులాగా థాతు అర్థంలో కాకుండా, సాధాణ అర్థంలో ఉపయోగించారు. ‘హిజరీ’ శకం ప్రారంభమైనప్పటి నుండి అంటే క్రీ.శ. 622 నుండి ‘మొహర్రం’ అనే పదం వాడుకలో ఉంది. అయితే ‘మొహర్రం’ ఉత్పవానికి కారణమైన కర్బలా యుద్ధం క్రీ.శ. 680లో జరిగింది.

‘మొహర్రం’ నెలలోనే కర్బలా యుద్ధం జరిగి మహమ్మదు ప్రవక్త మనవడు (గ్రాండ్ సన్) ఇమాయ్ హుసేన్, అతని పరివారం మొత్తం దెబ్బి రెండు మంది హతులుగావింప బడ్డారు. వీరమరణం చెందిన ఈ 72 మంది వీరు సంస్కరణార్థం, స్మృత్యర్థం పొందింపబడు శోకవ్యంజక కార్యక్రమమే ‘మొహర్రం’ వాడుక భాషలో ‘పంజే-కా-ఈద్’, ‘అఘరా’, ‘షేర్ల పండుగ’ మొదలైన పేర్లతో వ్యవరిస్తున్నారు.

హాడుకలో ఉన్న ‘ఈడ్’ పండుగలకు ‘సంతోషంతో జరుపుకునే’ అనే అర్థం ఉంది. కాని ‘మొహర్రం’ సందర్భంలో మాత్రం వీటికి ఈ అర్థాలు తీసుకోకూడదు. ఎందుచేతనంటే మృత వీరులను, యుద్ధ భీవత్సవాన్ని గుర్తు చేసుకుంటూ శోకించే కార్యక్రమం ఇది.

‘మొహర్రం’ మొదట అరేబియా దేశంలో ప్రారంభమైంది. హుస్సేన్ పరివారాన్ని అంతమొందించిన సంవత్సరం కాలం తర్వాత ‘యెజీద్’ కర్బలా యుద్ధంలో హుసేన్ వర్గం వాడిన వస్తువులను, రాజ చిహ్నాలను ‘మదీనా’ పంపించాడు. వాటిని చూచిన ప్రజలు అగ్రహవేశాలతో ‘యెజీద్’ వర్గానికి వ్యతిరేకంగా వీధుల వెంబడి ప్రదర్శనలను చేశారు. ఆ తర్వాత చాలాకాలం పాటు ఇటువంటి ప్రదర్శనలను ‘ఖలిఫాలు’ అనగా దొక్కారు. మొహర్రం నిరసనను నిషేధించి అందులో పాల్గొన్న వారికి శిక్షించసాగారు.

తర్వాత క్రీ.శ. 1109 నుండి మొహర్రం నిరసన ప్రదర్శనలు బహిరంగంగా ప్రదర్శించడం ప్రారంభమై ప్రతి సంవత్సరం కొనసాగుతున్నాయి. అలాటి కర్బలా యుద్ధభూమి నేడు ముస్లింలకు ముఖ్యంగా ‘షియా’ వర్గీయులకు పవిత్రమైన యాత్రా స్థలంగా మారింది.

హుసేన్ హత్యచరిత్రను, అనేక ప్రాంతాలలో ఆరుబయట నిర్మితమైన వేదికలపై దృశ్య రూపకంగా ప్రదర్శించేవారు. నాటి వేదికలు, ప్రదర్శనలే నేటి పీర్ల కొలువులకు ఊరేగింపులకు బీజాలు. ప్రారంభంలో ‘హియాలూ’ హుసేన్ సానుభూతి పరుల ఒక పద్ధతిగా శోకాన్ని వ్యక్తపరస్తూ వచ్చారు. నల్లని కంబళ్ళను వీధుల వెంబడి ప్రదర్శిస్తూ, హృదయాలను బాదుకుంటూ, శోకిస్తూ వెళ్ళేవారు, ముస్లింల ఇతర పండుగలకు లాగా మొహర్రంను పాటించడంలో ఖచ్చితమైన నియమాలేవి లేని కారణంగా ఒకదేశానికి మరోదేశాని అలాగే భారతదేశంలో ఒక ప్రాంతానికి, మరో ప్రాంతానికి అనేక తేడాలు కనబడుతున్నాయి.

భారతదేశంలో ‘మొహర్రం’ ఎప్పటి నుండి ప్రారంభమైందో ఖచ్చితంగా తెలియనప్పటికీ రాజులారాజులతో ఈ ఉత్సవాన్ని ప్రారంభించింది మాత్రం ‘తైమూరు’ రాజుగా చెప్పవచ్చు. రాజాజ్ఞతో చేయబడిన ఉత్సవంలో అన్ని వర్గాల ప్రజలూ పాల్గొనటం సర్వసాధారణం. అయితే అలాంటి ఏ ఆజ్ఞ లేకుండా భారత దేశంలో అన్నివర్గాల ప్రజలూ మొహర్రం ఉత్సవంలో పాల్గొనడం విశేషంగా చెప్పవచ్చు. దక్కనులో గోల్కొండ కుతుబ్ షాహీలు తమ అంతస్తులను, స్థితిగతులను పక్కనపెట్టి సాధారణ ప్రజలతో సమానంగా ఈ ఉత్సవాలలో పాల్గొనేవారు.

ముస్లిమేతరులు ‘మొహర్రం’ ఉత్సవంలో పాల్గొనడానికి ముఖ్యంగా ఈ క్రింది కారణాలు చెప్పవచ్చు. ‘మసీదు’ లలో ప్రవేశానికి నోచుకొని ముస్లిమేతరులు ఈ ‘ఆషుర్ ఖానా’ లలోకి శ్వేచ్ఛగా అనుమతించబడటం. అధమ కులాలుగా భావించుకునే వారికి ఉన్నత కులస్తులతో పాటు సమానప్రాతి నిధ్యం లభించటం, స్త్రీలకు ప్రత్యేకంగానే అయినప్పటికీ పురుషులతో సమానంగా ‘ఇమాం బారా’ (షీర్షచావడి) లలోకి అనుమతి కల్పించబడటం వరదా పద్ధతి పాటించే ముస్లిం స్త్రీలతో పాటు అన్ని వర్గాల స్త్రీలు పాల్గొనే అవకాశం ఉండటం మొదలైన విషయాలు భారతదేశంలోని ముస్లిమేతరులను విశేషంగా ఆకర్షించాయి. దీనికి తోడు ‘షియా’ వర్గీయుల లోని ఉదార స్వభావం, ఇతరమతాలను గౌరవించటం. అన్ని కులాల ప్రజలతో నూ సోదర భావంతో మెలగటం వంటి విషయాలు ఇరువర్గాల మధ్య సాన్నిహిత్యం పెంచాయి.

అయితే గ్రామాలలో ప్రజలు 'మొహర్రం' ఉత్సవంలో పాల్గొనడానికి మరో విశిష్టమైన కారణం ఉంది. అది 'పీర్లు' కు మహాత్మాములు ఉంటాయనే నమ్మకం ప్రజల్లో ఉండటమే ఈ నాటికి రాయలసీలోని గ్రామాలలో 'పీర్లు' ఎత్తు కున్న వారికి 'స్వామి' పూనడం 'లేదా' స్వామి ఆవరించడం ఉంది. దీనినే స్వామి పైలోకాచార్యుడు, పీరు పై నిందించి. అని పిలవడం కనబడుతుంది. ఈ విధంగా పీరు పైనిండినప్పుడు మొక్కబదులు కోరుకోవడం, ఆ విధంగా వారి కోరికలు నెరవేరడం ఇప్పటికీ జరుగుతున్నదని ప్రజల విశ్వాసం. వారి నమ్మకాలకు ప్రత్యక్షసాక్షిమే హుసేన్ రెడ్డి, ఉసేనప్ప, ఫక్రీరపు, మస్తాన్ రెడ్డి, దస్తగిరి రెడ్డి, నబీ గాడు, ఉసేనమ్మ, కుళ్ళాయమ్మ, లాలమ్మ వంటి పీర్లు సంబంధించిన పేర్లు ముస్లిం తరలు పెట్టుకోవడం.

కుటుంబంలో కష్టాలు వచ్చినప్పుడు, దంపతులకు సంతానం లేక పోవడం వంటి విషయాలు ఎదురై నప్పుడు, కష్టాలు తొలగిపోవాలని, తమ కోరిక తీరాలని ఆశ మాత్రమే ఉంటుంది. అలాంటి సందర్భాలలో వారి కోరికలో నెరవేరతాయని అనుకుంటే వంద దేవుళ్ళకైనా మొక్కుకుంటారు. అప్పుడు వారికి ఈ దేవుడు మరో కులాన్నికీ లేదా మతానికి చెందిన వాడు అని నామమాత్రం గానైనా అనిపించదు. ఒక్కసారి వారి మొక్కుబడి తీరిందంటే వారి నమ్మకం ఎప్పటికీ పోదు, ఆ తర్వాత వందసార్లు వారి కోరికలు నెరవేరక పోయినా సరే. ఆ నమ్మకమే భారతదేశంలోని ప్రజలు మొహర్రం ఉత్సవంలో పాల్గొనడానికి, అలాగే ముస్లిం యోగుల సమాధులైన 'దర్గా' ల వద్ద దర్శనానికి రావడానికి ప్రధానమైన కారణమని వారి మాటలను బట్టి తెలుస్తున్నది. మరో విధంగా చూస్తే విగ్రహారాధన, వ్యక్తిపూజకు వ్యతిరేకమైన ఇస్లాం లో దాదాపు అలాంటి విషయాల 'మొహర్రం'లో కనిపిస్తాయి. ఈ విషయాలు కూడా హిందువులను ఆకర్షించక పోలేదు. నేటికీ గ్రామాలలో ఈ ఉత్సవంలో పాల్గొనే తొంభైశాతం మందికి మొహర్రం పూర్వ చరిత్రంటో, అది ఎందుకు చేస్తున్నారో తెలియదు. ఈ విషయం గురించి ప్రశ్నిస్తే కొన్ని కల్పిత కథలు మాత్రం వినిపిస్తాయి. అయితే హుసేన్. హుసేన్ సోదరులు శత్రువుల చేతిలో చంపబడ్డారని వీరు తమ స్వార్థం కోసం కాక కొన్ని మానవ విలువలకోసం ప్రాణాలర్పించారని మాత్రం వీరి నమ్మకం. అలాగే హుసేన్, హుసేన్ ల తల్లి 'ఫాతిమా' మీదకూడా వీరికి ఎనలేని అభిమానం ఉంది. అందుకే తెలుగులోని మొహర్రం గీతాలలో వీరిపేర్లు ఎక్కువగా వినిపిస్తాయి.

గ్రామాలలో పెద్దమ్మ, పోచమ్మ, యల్లమ్మ వంటి గ్రామ దేవతలకు ఎంత ప్రాముఖ్యం ఉందో 'పాతమ్మ' (బీబీ ఫాతిమా) కు కూడా సమాన ప్రాతినిధ్యం ఉంది. కలుపు పాటలలో కూడా వీరి కథలో కనిపిస్తాయంటే వీరికి గల అభిమానం ఎటువంటిదో తెలుస్తుంది.

మొహర్రం చారిత్రక నేపథ్యం తెలిసిన ముస్లింలలో 'షియా' లు మాత్రం ఈ ఉత్సవాన్ని ఖరీదైన నియమాలను పాటించి, వీరప్రత దీక్షాపరులై జరుపుకుంటారు. ఉదాహరణకు హైదరాబాదులోని ఉత్సవ విధానాన్ని చెప్పుకోవచ్చు. మొహర్రం ప్రారంభం నుండి నలభై రోజులపాటు నల్లని వస్త్రాలను ధరించటం, మితంగా భుజించటం, మితంగా మాట్లాటం, ప్రారంభ దినాలలో 'మజ్లిస్' అంటే ప్రత్యేక సభలను ఏర్పాటు చేసి అందులో కర్బలా యుద్ధ విషాద గాథలను స్మరించుకుంటూ రోదించటం 7 నుండి 10 వ రోజు వరకూ "మర్సియా", "నాహా" వంటి ప్రత్యేక మొహర్రం శోకగీతాలను చదువుతూ చేతులతో రామ్ములను బాదుకోవడం ఇంకా కత్తులతో తమ శరీరాలను గాయపరచుకోవటం వంటి పద్ధతులను పాటిస్తారు. 9,10వ రోజులలో 'షియా'లో కుటుంబాలలోని మూడు సంవత్సరాలు పై బడిన పిల్లల నుండి పెద్దల వరకూ పురుషులు తలపై కత్తితో గాయం చేసుకుంటారు. దీనిని 'ఖమ్' అంటారు. అలా 'ఖమ్' చేస్తున్న సందర్భంలో ఒకే కత్తిని కడగకుండా



ఒకరి తర్వాత మరొకరు గాయం చేసుకోవడం ఇప్పటికీ కొనసాగుతోంది. మొహరం నలభైరోజులూ 'షియా' ఆనందోత్సవాలకు, శుభ కార్యాలకు, విందులకు దూరంగా నిరాదంబరమైన జీవితాన్ని గడుపుతారు. ఇంత నిష్ఠతో చేయడానికి కారణం, మొహరం ను పాటించడం తమ జీవిత పరమ ధేయంగా వీరు భావించడమే. ఇటువంటి నియమాలతోపాటు, మొహరం ప్రారంభం కాగానే బాటసారుల దాహం తీర్చడం కోసం అనేక త్రాగు నీటి కేంద్రాలను ఏర్పాటు చేస్తారు. వీటిని 'సాబిల్' అంటారు. అదే విధంగా బెల్లం, చెక్కర పాన కాలు, పాల పానకాలు పంచటం పరిపాటి ఇక 'మజ్లిస్' లు జరుగుతున్న సందర్భాలలో రొట్టెలు, ఖర్జూరాలు పంచిపెట్టడం, ఆ తర్వాత 'షియా' కుటుంబాలలో ఉచిత అన్నదానాలు కూడా జరుగుతాయి.

'మాతం' చేస్తున్నప్పుడు చదివే ఉర్దూ శోక గీతికలలో అనేక రకాలు ఉన్నాయి. అవి 'మర్సియా', 'నాహ', 'సలామ్', 'సోస్', 'వావైలా', 'జారీ', 'బిదా', పిలిచే పేరేదైనా అందులో వస్తువు మాత్రం ఒక్కటే కర్చలా యుద్ధ, యుద్ధానంతర, విషాదగాథలు

ఉదాహరణకు : ఉర్దూమొహరం గీతిక లలోని వస్తువును, పాడే విధానాన్ని పరిశీలించండి.

1. కూఫే కా ఔర్ షామ్ క మంజర్  
కూఫే కా ఔర్ షామ్ క మంజర్  
యాద్ జబ్ అజాతహై బాబా  
దిల్ మెర ఫట్ జాతహై బాబా
2. మజ్ లూమ్ హుసేన్..... మజ్ లూమ్ హుసేనా  
లాచా ర్ హుసేనా..... లాచార్ హుసేనా  
ఈషర్ షబే మా తమే హుసేనా  
లాచార్ ..... లాచార్..... లాచార్ హుసేనా

'షియా' యే తరులు జరుపుకునే మొహరం ఉత్సవ విధానంలో ఒక చోటికి, మరో చోటికి చాలా వైవిధ్యం కనిపిస్తుంది.

ఉదా : అనంతరంలో జరిగే ఉత్సవంలో పూలను విపరీతంగా వాడతారు. 10వ రోజు పూలతో అలంకరించిన 'పీరు' ను ఎత్తు కోవడానికి ఇద్దరు, ముగ్గురు వ్యక్తులు కావలసి ఉంటుంది. అక్కడ మొక్కుబడులు కోరుకునే వారు తలపై నుండి నీళ్ళు పోసుకొని తడి బట్టలతో 'పీరు' నడుస్తున్న దారిలో పడుకుంటారు. అందులో పాల్గొనే వారు ఎక్కువగా ముస్లిమేతరులే. అలాగే అనంతపురం జిల్లా గుత్తిలో పీర్లను ఊరేగిస్తున్న సమయంలో నిప్పు స్పటికలు ఎగురవేయడం కనిపిస్తుంది. అక్కడ గుత్తి కోటలో పీర్ల బయటికి, బయటి పీర్లు కోట లోపలికి ప్రవేశించవు. ప్రతి దానికి ఏదో కథ ముడిపడి ఉంటుంది.

ఇక గూగూడులో ఉన్న 'పీరు' పేరు కుళ్ళాయస్వామి. అక్కడ కూడా నిప్పు గుండం ఏర్పాటు చేయడం, ఈ అగ్ని గుండంలో పీరు నెత్తుకున్న వ్యక్తి అటూ, ఇటూ తిరగడం గమనించవచ్చు.

హైందవ మతంలో అగ్నికి విశిష్టమైన ప్రాధాన్యం ఉంది, మొహూరంలో వీరి (హిందువుల) ప్రమేయం ఎక్కువ ఉండటం చేత అగ్నిగుండం, నిప్పుగుండం ఈ ఉత్సవంలో చోటు చేసుకుంది. ఇక్కడ గమనించ దగ్గ విషయం ఏంటంటే మొహూరంలోని అగ్నిగుండం సన్నివేశానికి సింగపూర్‌లోని అతి పురాతనమైన హిందూ ఆలయం “మరియామెన్”లో జరిగే ‘ఫైర్ వాకింగ్’ ఉత్సవానికి దగ్గరి పోలికలు ఉండటం.

పండుగలో పొల్గానే విధానం ఆచరించే నియమాలు, పండుకునే వంటలు, ఆచార సంప్రదాయాలు వేరుగా ఉండవచ్చు కాని, ఆఫుర్ ఖానాలలో అందరూ కలిసి కూర్చోవడం, గ్రామంలో ఒక తెలుగు గీతాన్ని పాడుతున్నప్పుడు ముస్లింలు సైతం వంత పాడడం, అలావా తొక్కడం (అగ్నిగుండం చుట్టూ ఒక లయ బద్ధంగా ఎగరడం), ‘పీర్ల’ పేరుమీద పంచే ప్రసాదాన్ని అన్ని మతాల వారూ భక్తి శ్రద్ధలతో స్వీకరించడం పీర్లకు తమ సంప్రదాయాలలో మొక్కు బదులు తీర్చుకోవడం వంటి విషయాలు ప్రజల మధ్య సాన్నిహిత్యం పెంచడానికి ఉపయోగపడుతాయనడంలో సందేహం లేదు.

‘పీర్ల పండుగ ఇప్పుడు హిందువుల పండుగ’ అయినది అని ఆచార్య తూమాటి దొణప్ప గారు వ్రాయటం అలాగే ‘ఆధ్యాత్మిక సంస్కృతి, మత సంస్కృతి కంటే, భౌతిక సంస్కృతి కంటే ఉత్పృష్టమైనది కనుక అది దేశ కాల మాతాతీతంగా ఉంటుంది”. అని ఆచార్య బిరుదురాజు రామరాజు గారు పేర్కొనడం మొహూరం యొక్క ప్రాధాన్యతను తెలుపుతుంది. పీర్ల పండగ గురించి తెలుగులో మొదటి వ్రాసింది, వీరిరువురే.

**ఆధార గ్రంథాలు :**

- 1) తూమాటి దొనప్ప - ‘జానపద కళాసంపద’ విశాలాంధ్ర పబ్లిషింగ్ హౌస్, హైదరాబాదు
- 2) బిరుదురాజు రామరాజు - 1) ‘తెలుగు జానపద గేయసాహిత్యం’ జానపద విజ్ఞాన ప్రచురణలు, హైదరాబాదు  
2) “మొహూరం ఫోక్ సాంగ్స్ ఇన్ తెలుగు”
- 3) ఆర్.వి.ఎస్. సుందరం - “ఆంధ్రుల జానపద విజ్ఞానం” తెలుగువిశ్వవిద్యాలయం, హైదరాబాదు
- 4) ఎ.ఎల్.బాషమ్ - “ద వండర్ డట్ వాజ్ ఇండియా”
- 5) సాదిఖ్ నఖ్వీ - “కుతుబ్ షాహీ ఆఫుర్ ఖానాన్”
- 6) ఫజల్ అహ్మద్ - “హుసేన్ ది గ్రేట్ మార్షియర్”
- 7) మజ్దూ అనద్ - “ఇండియన్ ముస్లిం ఫెస్టివల్స్ అండ్ కస్టమ్స్”



## **SOCIO DEMOGRAPHIC PROFILE AMONG PULMONARY TUBERCULOSIS PATIENTS UNDER RNTCP IN SELECTED PERIPHERAL HEALTH INSTITUTIONS IN U.T OF PUDUCHERRY**

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### **Abstract**

**Background:** Tuberculosis remains a worldwide public health problem despite the fact that the causative organism was discovered more than 100 years ago and highly effective drugs and vaccine available making tuberculosis a preventable and curative disease. India is highest tuberculosis burden country in the world in the term of absolute number of incident cases that occurs each year.

**Aims and objectives-** To study the socio demographic profile of pulmonary tuberculosis patients in selected peripheral health institutions under RNTCP.

**Material and method:** A cross-sectional, descriptive and community based study was conducted at selected Peripheral health institutions in Puducherry. A total of 136 patients of age group 15 years and above were included in the study. Pre tested, semi structured questionnaire were used for data collection. Data were entered in MS excel and analyzed in SPSS software.



**Results:** Out of 136 subjects, 62(45.6%) were in the age group as above 45 years, 96(70.6%) of them were male, most of them as 119(87.5%) were Hindus, 85(62.5%) of them were married, 89(65.4%) were leading life as Nuclear family. In relation to the total members in the family 69(50.7%) had 4-7 members and in the family and 39(28.7%) of them had completed middle schooling education, 57(47.9%) of them were skilled worker, 53(39%) of them earns only Rs.1803-5386 per month as family income. Among 136 subjects, as per modified Kuppasamy Socioeconomic status majority of the subjects as 88(64.7%) of them belongs to Upper Lower(Class IV) socio economic status. Regarding the subjects personal habits majority of them 85(62.5%) were Alcoholic, 66(48.5%) of them were smokers, 69(50.7%) of them were felt disturbed sleep, 101(74.3%) subjects felt that they reside in inadequate cross ventilation and 73(53.7%) of them had 1-2 rooms in their house. Among 136 subjects 31(22.8%) of them heard about the disease tuberculosis and only 10(7.4%) patients only known about DOTS by Radio/Television.

**Conclusion:** An overall improvement in living condition, education, socioeconomic status and sanitation is necessary to decrease the prevalence of tuberculosis. Socio-economic status and risk factors have played a vital role for treatment success. To eradicate Tuberculosis (TB), a holistic and interdisciplinary approach would be necessary to improve the socio-economic status along with proper screening and treatment of underlying risk factors. More precise health education and proper awareness programmes have to be implemented from the grass-root level to get rid of TB. Public health education, to make the people aware about preventive aspects of the disease is important.

**Key words:** Socio demographic, Tuberculosis, RNTCP.



## Introduction:

Tuberculosis(TB) is caused by a bacteria known as Mycobacterium TB which most often affect the lungs. TB is curable and preventable. About one-third of the world's population has latent TB, which means people have been infected by TB bacteria but are not (yet) ill with the disease and cannot transmit the disease. People infected with TB bacteria have a 10% lifetime risk of falling ill with TB. When a person develops active TB disease, the symptoms (cough, fever, night sweats, weight loss etc.) may be mild for many months. This can lead to delays in seeking care, and results in transmission of the bacteria to others. People with active TB can infect 10-15 other peoples through close contact over the course of a year.**(World Health Organization(WHO),2017)**

TB remains a worldwide major global public health problem despite the fact that the causative organism was discovered more than 100 years ago and highly effective drugs and vaccine are available making TB a preventable and curable disease. The current global picture of TB shows continued progress but not fast enough.  
**(Park.J.E)**

Tuberculosis (TB) is one of the oldest diseases known to mankind since time immemorial and continues to be a major public health problem even in today's modern world. It is a preventable and curable disease, but still million of people suffer every year and a number of them die from this disease, resulting in a heavy impact on social and economic development. Its causative organism Mycobacterium tuberculosis was one of the disease is clearly understood. A vaccine against tuberculosis has been available for close a century .Effective treatment against the disease has been available for sixty years. Yet the disease is close to its highest level ever and so,



the World Health Organisation declared tuberculosis as a global public health emergency in 1993. **(WHO.2008)**

Realizing the importance of the TB problem, global targets for reductions in the burden of TB disease in terms of incidence, prevalence and mortality have been set along with the Millennium development goals (MDGs) and the Stop TB partnership. One of the targets of the MDGs is 'to halt and reverse the incidence of TB by 2015'. The MDGs include three indicators for measurement of the progress in TB control, i.e., prevalence and death rates, and the proportion of cases that are detected and cured in DOTS (Direct Observed Treatment Short course) Programmes. The MDG target has been endorsed by the Stop TB Partnership. The Partnership has also set two additional targets for 2015: 'to halve TB prevalence and death rates by 2015 compared with 1990 levels'; and 'the target of eliminating TB by 2050'. **(WHO, 2006)**

In Tamil Nadu RNTCP is implemented since 2001. Today RNTCP covers 33 districts in Tamil Nadu with a total population of 771 lakhs. In the year 2016 about 82,107 TB patients notified from public sector 67,427 (82%) pulmonary TB cases were notified from public sector and 48,448 (59%) microbiologically confirmed. There are 220 TB units and 784 Designated Microscopy Centres across the state to carry on the diagnosis and treatment of TB. Treatment outcome in the year 2016 out of 34,540 registered new smear positive cases 83% cured, 3% completed, 6% died, 2% failure and 7% lost to follow up **(TB India, 2017)**

RNTCP has been effectively functioning in the Puducherry state with achievements well above the target of a case detection rate of 70% and cure rate of 85% among newly detected TB cases. In Puducherry with a total population of 14 lakhs in the year 2016 about 1415 TB patients notified from public sector, 1048



(74%)pulmonary TB cases, New cases 1199(85%) were notified from public sector and 836(59%)microbiologically confirmed. There are 220 TB units and 784 Designated Microscopy Centres across the state to carry on the diagnosis and treatment of TB. The treatment outcome in the year 2016 out of 590 registered new smear positive cases 89% cured ,all are completed the treatment , patients who died during the course of treatment was 4%, with the failure rate of 2%, default rate of 4% and 1% switched to cat IV **(TB India,2017)**. In this study we tried to know the socio demographic profile of the study subject.

### **Material and Methods**

This study was a cross-sectional, descriptive and community based study. The present study was carried out in selected peripheral health institutions in Puducherry under RNTCP. Patients those who were newly diagnosed sputum positive pulmonary tuberculosis were interviewed by the use of pre-tested, semi structured questionnaire. A total of 136 patients were interviewed from 4 urban peripheral health institutions as Lawspet,Mettupalayam,Reddiarpalayam and Muthaliarpet between June 2015 to June 2016. Tuberculosis Patients < 15 years, TB patients not willing to participate in the study and extra pulmonary tuberculosis patients and HIV-TB were excluded from the study. A pre-tested, semi structured questionnaire was used for data collection which contains 4 parts as regarding socio-demographic profile of the subjects. Part-I.Personal data(age, gender, religion, marital status, education, occupation, family income per month ,type of family,no of members in the family and socio economic status scale).Part-II.Pesonal habits(Alcohol,Smoking,chewing habits, dietary pattern and sleep pattern.)Part-III.Housing condition(Type of house,cross ventilation,lighting,no. of rooms,Family member with tuberculosis and child <6 yrs.) and Part-IV.Source of information(Heard about Tuberculosis and DOTS)



## Statistical Analysis

Statistical analysis was done by using descriptive and inferential statistics. Data were collected in a predesigned Microsoft®Excel 2007.

## Results

Out of 136 subjects, 62(45.6%) subjects were in the age group as above 45 years.96(70.6%) of them were male, most of them 119(87.5%) were Hindus, 85(62.5%)of them were married, 89(65.4%)were leading life as Nuclear family.In relation to the total members in the family ,69(50.7%) had 4-7 members and in the family and 39(28.7%)of them had completed middle schooling education ,57(47.9%) of them were skilled worker , 53(39%) of them earns only Rs.1803-5386 per month as family income. Among 136 subjects, as per Kuppusamy Socioeconomic status scale majority of the subjects as 88(64.7%) of them belongs to Upper Lower(Class IV).Regarding the subjects personal habits majority of them 85(62.5%) were Alcoholic,66(48.5%) of them were smokers,69(50.7%)of them were felt disturbed sleep,74(54.4%)of them residing in semi-pucca house,101(74.3%)of them have inadequate cross ventilation and73(53.7%)of them had 1-2 rooms in their house.Among 136 subjects 31(22.8%)of them heard about the disease tuberculosis and only10(7.4%)known about DOTS by Radio/Television.

## Discussion

In this study among 136 subjects, 62(45.6%) subjects were in the age group as above 45 years. **Maske et al** conducted study in Maharashtra and found that 66.7% were at productive age group. Another study conducted by **Ibrahim et al** in Nigeria also found that 61% were within the age of 25-44 year. Mostly 96(70.6%) of them were male affects with the disease. This could be due to more exposure of males to outside environment and female often used to ignore their initial symptom due to their responsibilities towards their families as well as children. In this study most of them 119(87.5%) were Hindus,



85(62.5%) of them were married, 89(65.4%) were leading life as Nuclear family. In relation to the total members in the family, 69(50.7%) had 4-7 members and in the family.

Among 136 subjects 39(28.7%) of them had completed middle schooling education. The level of education is very much important in health seeking behavior of tuberculosis patients. **Jethani et al** observed in their study that 66.4% patients were illiterate and 33.6% were literate. **Maske et al** found that 23.7% patients were illiterate and 43.2% were literate. Among 136 subjects 57(47.9%) of them were skilled worker, 53(39%) of them earn only Rs.1803-5386 per month as family income. This reveals that daily wages worker and industrial/factory worker were more vulnerable for getting infection with tuberculosis. **Maske et al** revealed in their study that 30% patients were laborers and 28.8% were farmer. **Gupta S et al** concluded in their study that majority of study subjects were laborers by occupation. Among 136 subjects, as per Kuppasamy Socioeconomic status scale majority of the subjects as 88(64.7%) of them belongs to Upper Lower(Class IV).

It reveals that patients from low socioeconomic class get easily infection from outside environment due to poverty and under nutrition. **Q H Khan** found in his study that high prevalence rate of tuberculosis (21.88/1000) in lower socioeconomic class. Regarding the subjects personal habits majority of them 85(62.5%) were Alcoholic, 66(48.5%) of them were smokers. In smokers, the mucous membranes of the lungs would be damaged and inflamed with paralyzed hair cells. The impact of smoking would make the lungs susceptible to infections including TB. In addition to the fact that the TB bacteria are not efficiently removed after inhalation, chronic lung damage impairs the lung immunity and might increase susceptibility to TB. (**Bhattarai S et.al.**) In support to the present study, **Maiti et al** had revealed that both smoking and alcoholism had independently and synergistically



increased the TB severity significantly in urban and rural part of Eastern India. Also, **Gopi et al** found no statistical association between smoking or alcoholic habits and TB.36 ,Regarding their sleep pattern,69(50.7%)of them were felt disturbed sleep,74(54.4%)of them residing in semi-pucca house,101(74.3%)of them have inadequate cross ventilation in their house and73(53.7%)of them had 1-2 rooms in their house.Among 136 subjects 31(22.8%)of them heard about the disease tuberculosis and only10(7.4%)known about DOTS by Radio/Television. The study findings indicates that tuberculosis patients were belongs to low economic status and inadequate knowledge on the disease and treatment modalities.

**TABLE 1: Distribution of Demographic Variables of the Subjects(Personal Data)**  
 N = 136

| Demographic Variables      |                    | Frequency No. | Percentage % |
|----------------------------|--------------------|---------------|--------------|
| Age (in years)             | 1.15-45            | 74            | 54.4         |
|                            | 2.>45              | 62            | 45.6         |
| Gender                     | 1.Male             | 96            | 70.6         |
|                            | 2.Female           | 40            | 29.4         |
| Religion                   | 1.Hindu            | 119           | 87.5         |
|                            | 2. Muslim          | 07            | 5.1          |
|                            | 3..Christian       | 10            | 7.4          |
| Marital status             | 1.Single/Unmarried | 45            | 33.1         |
|                            | 2.Married.         | 85            | 62.5         |
|                            | 3.Divorcee         | 03            | 2.2          |
|                            | 4.Widow/er         | 03            | 2.2          |
| Area of Residence          | 1.Rural            | 0             | 0            |
|                            | 2.Urban            | 136           | 100          |
| Type of Family             | 1.Joint Family     | 47            | 34.6         |
|                            | 2.Nuclear Family   | 89            | 65.4         |
| Total No.of Family Members | 1.1-3              | 61            | 44.9         |
|                            | 2.4-7              | 69            | 50.7         |
|                            | 3.More than 7      | 06            | 4.4          |



Table – 1 shows the distribution of Demographic Variables of the subjects. Among 136 subjects, 74 (54.4%) of them in the age group of 15-45 years and 62(45.6%) subjects were in the age group as above 45 years. Regarding their gender 96(70.6%) of them were male and only 40(29.4%) were females. In relation to their religion , most of the subjects 119(87.5%) were Hindus, only 7(5.1%) Muslim and the remaining 10(7.4%) were Christians.

Regarding their marital status 45(33.1%) were single/unmarried, 85 (62.5%) were married, 3(2.2%) were Divorcee & remaining 3(2.2%) were Widow/er. Regarding their area of residence among 136 subjects, 136 (100%) of them residing in Urban area. Among the 136 subjects regarding the type of Family, 47(34.6%) of the subjects in joint family and mostly 89(65.4%) were in Nuclear family. In relation to the total members in the family 61(44.9%) had 1-3 members, 69(50.7%) had 4-7 members and only 6(4.4%) had more than 7 members in the family.

**TABLE 2: Distribution of Socio Demographic Variables of the Subjects (As Per Kuppusamy Classification Of Socio Economic Status)**  
N = 136

| Demographic Variables |                                             | Frequency No. | Percentage % |
|-----------------------|---------------------------------------------|---------------|--------------|
| Education al Status   | 1. Profession or Honours                    | 01            | 0.7          |
|                       | 2. Graduate or post graduate                | 26            | 19.1         |
|                       | 3. Intermediate or post high school diploma | 14            | 10.3         |
|                       | 4. High school certificate                  | 11            | 8.1          |
|                       | 5. Middle school certificate                | 39            | 28.7         |
|                       | 6. Primary school certificate               | 22            | 16.2         |
|                       | 7. Illiterate                               | 23            | 16.9         |



|                                |                             |                      |                     |
|--------------------------------|-----------------------------|----------------------|---------------------|
| <b>Occupation</b>              | 1 Profession                | 03                   | 2.2                 |
|                                | 2 Semi-Profession           | 10                   | 7.4                 |
|                                | 3 Clerical, Shop-owner      | 06                   | 4.4                 |
|                                | 4 Skilled worker            | 57                   | 47.9                |
|                                | 5 Semi-skilled worker       | 21                   | 15.4                |
|                                | 6 Unskilled worker          | 14                   | 10.3                |
|                                | 7 Unemployed                | 25                   | 18.4                |
| <b>Family Income per month</b> | 1. $\geq 36017$             | 01                   | 0.7                 |
|                                | 2. 18000–36016              | 03                   | 2.2                 |
|                                | 3. 13495–17999              | 07                   | 5.1                 |
|                                | 4. 8989–13494               | 22                   | 16.2                |
|                                | 5. 5387–8988                | 48                   | 35.3                |
|                                | 6. 1803–5386                | 53                   | 39                  |
|                                | 7. $\leq 1802$              | 02                   | 1.5                 |
| <b>Score</b>                   | <b>Socio-Economic Class</b> | <b>Frequency No.</b> | <b>Percentage %</b> |
| 26-29                          | Upper (Class-I)             | 02                   | 1.5                 |
| 16-25                          | Upper middle(Class II)      | 09                   | 6.6                 |
| 11-15                          | Lower Middle(Class III)     | 30                   | 22.1                |
| 5-10                           | Upper Lower(Class IV)       | 88                   | 64.7                |
| <5                             | Lower (Class V)             | 07                   | 5.1                 |

Table – 2 shows the distribution of Demographic Variables of the subjects as per Kuppusamy Socioeconomic status scale. Among 136 subjects, regarding their Educational status, 39(28.7%) of them completed middle schooling, 26(19.1%), of them completed graduation or post graduation 22(16.2%) were studied upto primary school level 23(16.9%) were illiterate, 14(10.3%) of them in intermediate level 11(8.1%) of them studied till higher secondary level and only one 1(0.7%) of them completed Profession or Honours. Regarding their Occupational status, 57(47.9%) of them were skilled worker, 25(18.4%) were unemployed 21(15.4%) were semi skilled worker 14(10.3%) were unskilled worker and 10(7.4%), 06(4.4%) & 03(2.2%) were semi professionals, clerical/shop owner and Professional respectively.



In relation to their Family income per month as among 136 subjects, 53(39%) of them earns Rs.1803-5386 per month, 48(35.3%) of them earns Rs.5387-8988 per month, 22(16.2%) of them earns Rs.8989-13494 and 7(5.1%), 03(2.2%), 2(1.4%) & 1(0.7%) were earners Rs.13495-17999, Rs.18000-36016, Rs.≤1802 and Rs.≥36017 respectively. Among 136 subjects, as per Kuppasamy Socioeconomic status scale majority of the subjects as 88(64.7%) of them belongs to Upper Lower(Class IV).

**TABLE 3: Distribution of Demographic Variables of the Subjects(Personal Habits)** N = 136

| Demographic Variables   |                                      | Frequency No. | Percentage % |
|-------------------------|--------------------------------------|---------------|--------------|
| <b>Drinking Alcohol</b> | 1.Yes                                | 85            | 62.5         |
|                         | 2.No                                 | 51            | 37.5         |
| <b>Smoking</b>          | 1.Yes                                | 66            | 48.5         |
|                         | 2.No                                 | 70            | 51.5         |
| <b>Smoking type</b>     | 1.Cigarette                          | 47            | 34.6         |
|                         | 2. Beedi                             | 16            | 11.8         |
|                         | 3..Others                            | 03            | 2.2          |
| <b>Tobacco Users</b>    | 1.Chewing Tobacco                    | 10            | 7.4          |
|                         | 2. Chewing Tobacco with betal Leaves | 11            | 8.1          |
|                         | 3.Pan(form of Tobacco)               | 02            | 1.5          |
|                         | 4.Hans(form of Tobacco)              | 15            | 11           |
| <b>Dietary Pattern</b>  | 1.Vegetarian                         | 10            | 7.4          |
|                         | 2.Non-Vegetarian                     | 126           | 92.6         |
| <b>Sleep Pattern</b>    | 1.Normal                             | 67            | 49.3         |
|                         | 2.Disturbed                          | 69            | 50.7         |

Table – 3 shows the distribution of Demographic Variables of the subjects personal habits. Among 136 subjects 85(62.5%) of them were Alcoholic and 66(48.5%) of them were smokers. Among 66 smokers



47(34.6%)were smoking Cigarette and the 16(11.8%) of them smoke beedi and remaining 03(2.2%)of them smoke in other types.

Among 136 subjects 38(28%)of them were Tobacco users.In relation to that 15(11%)of them using HANS,10(7.4%) of them chewing Tobacco and remaining 11(8.1%) of them chewing Tobacco with betal leaves and 2(1.5%) of them using PAN.Regarding their Dietary habits,126(92.6%) of the subject as Non-Vegetarian and remaining 10(7.4%) were Vegetarians.In relation to their sleeping pattern,69(50.7%) were disturbed sleep and 67(49.3%) were normal sleep habits.

**TABLE 4: Distribution of Demographic Variables of the Subjects(Housing condition)**  
N = 136

| Demographic Variables                             |                     | Frequency No. | Percentage % |
|---------------------------------------------------|---------------------|---------------|--------------|
| <b>Type of House</b>                              | 1.Pucca             | 40            | 29.4         |
|                                                   | 2.Semi Pucca        | 74            | 54.4         |
|                                                   | 3.Kutchra           | 22            | 16.2         |
| <b>Cross Ventilation</b>                          | 1.Adequate          | 35            | 25.7         |
|                                                   | 2.Inadequate        | 101           | 74.3         |
| <b>Lighting</b>                                   | 1.Adequate          | 41            | 30.1         |
|                                                   | 2.Inadequate        | 95            | 69.9         |
| <b>Total No.of Rooms</b>                          | 1.1-2 rooms         | 73            | 53.7         |
|                                                   | 2.3-4 rooms         | 59            | 43.4         |
|                                                   | 3.More than 4 rooms | 04            | 2.9          |
| <b>Any Person had heath Problem same in House</b> | 1.Yes               | 30            | 22.1         |
|                                                   | 2.No                | 105           | 77.9         |

Table – 4 shows the distribution of Housing condition of the subjects Regarding their type of house,among 136 subjects,74(54.4%)of them residing in semi-pucca house,40(29.4%) of them in Pucca house and



remaining only 22(16.2%)of them residing in Kutcha house.In relation to their cross ventilation in the house,101(74.3%)of them have inadequate cross ventilation and remaining 35(25.7%) of them had adequate cross ventilation in their house.Regarding the total no of rooms in their house,73(53.7%)of them had 1-2 rooms,59(43.4%)had 3-4 rooms and only 04(2.9%)had more than 4 rooms.Regarding their health problem,among 136 subjects 30(22.1%) of the family members suffering with the same health problem as Tuberculosis.

**TABLE 5: Distribution of Demographic Variables of the Subjects(Source of Information)** N = 136

| Demographic Variables    |                     | Frequency No. | Percentage % |
|--------------------------|---------------------|---------------|--------------|
| Heard about Tuberculosis | 1.Yes               | 31            | 22.8         |
|                          | 2.No                | 105           | 77.2         |
| Heard about Tuberculosis | 1.Health Personnel  | 20            | 14.7         |
|                          | 2.Media(TV/Radio)   | 10            | 7.4          |
|                          | 3.Printed Materials | 01            | 0.7          |
| Heard about DOTS         | 1.Yes               | 12            | 8.8          |
|                          | 2.No                | 124           | 91.2         |
| Heard about DOTS         | 1.Health Personnel  | 01            | 0.7          |
|                          | 2.Media(TV/Radio)   | 10            | 7.4          |
|                          | 3.Printed Materials | 01            | 0.7          |
| Presence of BCG Scar     | 1.YES               | 108           | 79.4         |
|                          | 2.NO                | 28            | 20.6         |

Table – 5 shows the distribution of source of information of the subjects Among 136 subjects,31(22.8%)of them heard about the disease Tuberculosis. In that 12(8.8%) known about DOTS. Regarding the sources of health related information about tuberculosis,20(14.7%)known by Health personnel,10(7.4%)known by Radio/Television and 1(0.7%)by reading Newspaper. Regarding the sources of health related information about DOTS, 10(7.4%)known by



Radio/Television and 1(0.7%)by reading Newspaper and Health personnel.

## Conclusion

Pulmonary tuberculosis(PTB) has mainly affected the productive age group of the society. Thus, it has thwarted not only the social and economic development of individuals but also their families, society and the nation. It is mostly prevalent in the upper lower class community which are already struggling for their survival in the day to day life. The underlying risk factors like smoking, alcoholism and poor housing were more common among the population. Socio-economic status and risk factors have played a vital role for treatment success. Most public health efforts are focused on control of TB through early diagnosis and prompt treatment of patients. It is not surprising that cost effective strategies such as DOTS therapy have been successful to a larger extent even in the lesser socioeconomic status group. But the current predominantly treatment-based approach to TB control could not lead to its eradication unless matching and forceful efforts of prevention through socio-economic status improvement are initiated. In order to eradicate TB, a holistic and interdisciplinary approach with proper screening and treatment of underlying risk factors are highly needed. More precise health education and proper awareness programmes have to be implemented from the grass root level to get rid of TB.

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## **GANDHIAN WAY FOR A BETTER ENVIRONMENT**

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“When I admire nature, my soul expands”

**Gandhi**

A great way to pay homage to Mahatma Gandhi , who is immortal till today , is to adopt his basic principles and policies towards life, through practicing the self-reliance and self governance. They ultimately help to achieve environmentally sustainable development and enable us , to go for a Greener Globe for our future generations.

The moral influence which Gandhi has experienced upon the thinking of the people of the world, may be for more durable than it would appear likely in our present age.

Importance should be given to the qualitative improvement of human resources such as education and health . Better sanitation, better living conditions and better life, can be achieved only through the Gandhian way.

Once the great Nobel prize winning Scientist, Sir Albert Einstein told about Gandhiji that “Generations to come, will scarcely believe that, such a person as this, ever in flesh and blood, walked upon this earth”

### **Problems of the contemporary India**

India has many problems such as rapid population growth, consumption stress and strain on natural systems, degradation and depletion of natural resources affecting the life support system



unpredictable global climate change, ozone layer depletion and sea-level-rise, unemployment, poverty, economic inequality, social injustice, poor conditions of villages, big polluted cities, rivers and polluting industries . Self-sufficiency of villages, promotion of small and cottage industries, control on the import of consumption goods, improved agriculture etc, are some of the remedial ways to reach our goals for a better future .

### **Partnership with nature**

A sustainable society has to aim at working in partnership with nature and conserve resources and energy. It should produce goods that are easy to recycle, reuse and repair after use. The method of growing food and raising livestock have to be based on the use of soil and water conservation, bio-fertilizers, biological control of pests. The society should largely be a solar wind and bio-gas based. A society with a whole range of environment friendly technologies will develop faster . Hence, resources should be utilized prudently and the basic need of people is to be met without any serious problem to the environment. In this context Gandhiji's thought, shall always remain relevant for the smooth global development.

Gandhiji's entire life and deeds, indeed is an environmental legacy for the whole mankind. He was a true practitioner of environmentally sustainable development. Gandhi's personal life-style has adopted some important features related to nature . Here is a being, who is in harmony and peace with environment and himself. Although his all life was spent in an unequal battle with the mighty British Empire, he never neglected the natural way of life . His strength came to him on account of his spirituality and practice of non-violence and truth. In wider sense, these are the critical elements for the success of practicing sustainable development in true spirit. In brief, his whole life, was his message and a lesson on protecting and conserving



environment along with the development process. Gandhiji's life is an ideal one, not only for Indians, but also for the whole world.

### **Industrialization is the major enemy**

Gandhiji felt industrialization is going to be a curse for mankind. It cannot provide jobs for its millions of citizens and in addition it would be creating pollution problems. The development of thousands of cottage and village industries would provide an outlet for the creative facilities and resourcefulness of the people. It would also usefully employ many persons, who are in need of employment, which in return would add to the national wealth too. The big industries can never overtake the unemployed millions. Their aim is primarily to make money for the few owners.

### **Pollution of the globe**

Gandhiji was of the firm belief that, work and culture, should not be separated. God has given everyone the capacity to work and earn more than his daily bread. No labor is too mean for one who wants to earn an honest rupee. There is a perfect awareness that irrespective of all our economic planning, social philosophy, scientific discoveries, we have contributed to a situation which makes the life impossible now on this planet earth. The water we drink is becoming poisonous and scarce too. It is estimated that in the next 20 years, several cities and towns of many countries will not have sufficient surface or underground water sources. In addition, the marine forms are fast disintegrating and getting depleted. And many more such stories tell how the earth is becoming an unworthy place to live in.

### **Simple life style of Gandhiji**

Gandhiji abandoned the luxurious life, which he could have easily afforded. He preferred to be identified with poor people. This is because, one of the basic principles of Gandhian environmentalism,



is that “the earth provides enough to satisfy everyone’s need; but not for anyone’s greed”. Here is a statement that makes Gandhi a prophet not of the past but also of the future . If we take more than we need, we are actually taking from others. We are also taking from the future and destroying environment. Gandhiji opted for voluntary simplicity so as to end over-consumption, because ultimately that would be at the expenses of earth’s resources.

Gandhiji felt said that , we can use the bounties of nature; but not with an element of greed. He was a vegetarian and had compassion for all forms of life. In fact, he advocated “man has no power to create life, therefore has no right to kill any life also.” Gandhiji also believed that Non-violence and compassion are to be practiced towards living beings and inanimate materials also. Over use of the nature , motivated by greed and the desire to undue profit, at the expense of bio-sphere, is also a violence.

### **problems of sanitation**

Sanitation should occupy the foremost place. A healthy mind is possible only in a healthy body. Anyone who fouls the air by spitting about carelessly, throwing refuse or rubbish otherwise dirtying the grounds; sins against man and nature. Man’s body is the temple of god.

Gandhiji’s environmentalism, was based on various ethical principles such as : non-violence, celibacy- as a means of population control, and against wealth beyond one’s need.

sanitation of body, mind and surrounding, contentment with available resources austerly, introspection and meditation and even fasting for self purification and any dereliction of duties towards nature including human beings. In this process he controlled himself.



Being a yogi, he had complete control over his body and mind. He did not preach anything that he did not practice for himself.

### **Gandhi as an environmentalist**

Frequent occurrences of devastating flood, and dreadful earthquakes in recent times are consequences of our craze for development and its damaging impact on nature. Nations are mad after acquiring economic, military and political power in cutthroat compellation against each other. Very few states have at present nuclear power and keeping in view the destructive potentiality of the nuclear weapons, every nation is speaking against them. Nevertheless, those who do not have these weapons, do not really cease to aspire for acquiring them. Some of them indeed have been making clandestine efforts even at the neglect of their basic duties and necessities to become nuclear powers.

Very few people know that Gandhi was an environmentalist . This is primarily because the environmental problems have surfaced largely in the post-Gandhian era and as such, the concern for environment has assumed importance only in recent years. Nevertheless, there were people in the past too who could predict the future and visualize the dangers inherent.

It needs hardly any mention that entire problem of environmental hazards and degradations are rooted in the scientific-technological development leading to large scale and speedy industrialization and the consequent socio-culture upheavals the world over. The achievement of industrialization for mankind cannot be undermined. Industrialization has given to human society tremendous material pleasure and prosperity. But at the same time, it has also imperceptibly done irreparable loss to mankind. Reckless and limit less pursuit of industrialization by all nations are now posing



serious problems for the very existence of man and for all living creatures.

Detection of depletion of the ozone layer, and the warming up of the earth as a result of green house effect are serious pointers to the existential problems. Already numerous species of animals, birds and plants have become extinct. Desert formation is increasing with rapid speed. Deforestations and increasing emission of smokes and injurious gas are not only polluting the atmosphere, but also affecting adversely climatic conditions to the awful disadvantages of living being, Mushrooming of the slum area, as an unavoidable byproduct of urbanization the syndrome of our cherished mode of development is fatal to the physical atmosphere required for proper living. Disposal of industrial wastes and things like plastic and synthetic containers and discarded wares has already become a formidable problem not only in the developed west but also in the developed countries. The cumulative effect of all these factors on the health and living of human beings has caused an alarming concern among people in the entire world.

### **Disasters of the modern civilization.**

The main plank of the modern civilization is the insatiable and unending pursuit of material pleasure and prosperity. All modern western socio-economic and political theories and institutions are based on this cardinal principle and people in other parts of the world are blindly imitating it. If the trend is not arrested and a suitable alternative is provided, Gandhi believed, the result would be disastrous. For instance, the modern western economic development is flourishing on the extravagant utilization of the non-renewable resources like coal, oil and metal. So long it was confined to a few western countries. But when the whole world is involved in this never ending venture, this will play havoc with nature, he will be doing it at



the cost of his own existence. Perfect and meaningful existence is possible only in harmony and conformity with nature. Gandhi fully understood the primordiality of man-nature relationship and his theory and philosophy of life, society and politics are in consonance with it. It is this understanding of, and, reverence for, the salience and senility of nature for human existence which makes him an environmentalist par excellence.

This is precisely the reason of his condemnation and rejection of modern western and socio-economic and political systems. Gandhi highlights the ills of industrialization which is the base of modern civilization. Industrialization leads to centralization of economic power, it flourishes on exploitation of both man and nature and has now become the greatest source of pollution. It leads to urbanization which makes life miserable according to Gandhi. He was highly critical of the growth of big cities like Calcutta, Bombay, Madras and Delhi in India. As our present day experience shows, mega polls and metro polls are the real pollution centre of the world. Gandhi had visualized this and as early as in 1910 gave a graphic description of the consequences of madness for urbanization in the following words:

Nature works unceasingly according to her own laws, but man violates them constantly. In different ways and at different times, Nature tells man that there is nothing in the world which is not subject to change.

### **Quality of life for a better tomorrow**

Gandhi believed that a good life can be lived only in a small community. To him, big cities were centers of corruption and all kind of vices. Therefore, he remained an ardent advocate of the village life throughout. He repeatedly said that India lived in her villages. What he tried to underline was that the soul of India lived there; that the village life is the ideal life and that India should live in the villages. In fact, this is his universal prescription for a good life. It is a life of peace



and tranquility, a life of innate simplicity and a life in close proximity with nature. Such a life is also prone to the ethical. From scientific point of view too. This kind of life alone can be based on renewable resources. The pastoral and agricultural predominance in the pattern of life is conducive to the preservation of environment. An eminent Gandhian has thus highlighted this: A civilization built on renewable resources, such as the products of forestry and agriculture, is by this fact alone superior to one built of non-renewable resources, such as oil, coal etc. Environmentalist of today gives scholarly lectures and write research papers and books on the subject. There are also activist environmentalists no doubt. But we can easily discern in them the motives to be prominent and cash it for political purposes. Gandhi tried to carry the message to the mass through the life he himself led. This is what made him an environmentalist with a difference.

In 1909 in his book 'Hind Swaraj' Gandhi cautioned mankind against unrestricted industrialism and materialism. He did not want India to follow the west in this regard and warned that if India, with its vast population, tried to imitate the west than the resources of the earth will not be enough. He argued even in 1909 that industrialization and machines have an adverse effect on the health of people. Although he was not opposed to machines as such; he definitely opposed the large scale use of machinery. He criticized people for polluting the rivers and other water bodies. He criticized mills and factories for polluting the air with smoke and noise.

### **Gandhian ideas for the protection of environment**

Years before India became independent, Mahatma Gandhi was asked whether he'd like free India to be as "developed" as the country of its colonial masters? "No", he replied, "If it took Britain the rape of half the world to be where it is, how many worlds would India need?"



We need to learn our Gandhi today. Now that India and China are threatening to join the league of the rich, what will be the impact on the environment? What if every Chinese owns a car? But this should make the rich world think. Think not just about the impact on the resources of our planet. But of the economic paradigm of growth that has led to much less populated worlds, pillaging and degrading the resources of the only Earth.

The industrialized world may have cleaned up local air pollution in its cities. But its emissions have put the entire world's climatic system at risk and made millions even more vulnerable and poor because of global warming. If we follow the Gandhin ways of thinking and the solutions he gave us for a better understanding of the world , we can live happy and make the generations to come also happy . Hence we must protect the nature and follow the nature and lead a simple life style .

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## MONUMENTAL HERITAGE TOURISM IN ANDHRA PRADESH

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### Introduction

The word 'tourism' is derived from the French word 'Tor' and Greek word 'Tornos' meaning going in circles or moving around.<sup>1</sup> "Tourism is an important element of promoting understanding between different peoples and different cultures."<sup>2</sup> It promotes people-to-people contacts. Tourism is, in fact, one of the windows of the country to the world outside. Our efforts, therefore, must not only be to give travelers an idea of what the country is, but also to promote what it is capable of. Tourist interest in the country could translate itself into greater interaction in other fields, leading to greater business opportunities, developmental collaborations and cultural exchanges".<sup>3</sup>

In view of India's rich and varied monuments and the fact that they offer much that is unique, this class of tourism has clearly a great potential for development and in our view can be exploited to a far greater extent than at the present time. These tourists may further be broken down into those with general interest wishing to see a small selection only of the most important monuments; and those with more limited regional or thematic objectives. The monumental heritage may in broadest terms be divided into four principal sub-groups: monuments of Buddhism, starting with the sites associated with Buddha himself; Hindu monuments, ranging in time from the early centuries of the Christian era to the present day; and enormously varied in styles: the Indo-Islamic monuments; and, the monuments of European and British association with India. Each one of these four deserves to be exploited for purpose of Cultural tourism.<sup>4</sup>



Visiting historic and cultural sites is one of the most popular tourist activities today. As a result, nations are paying attention to one of the fastest growing niche market segments in the travel industry today—heritage tourism. The National Trust for Historic Preservation defines heritage tourism as “traveling to experience the places, artifacts and activities that authentically represent the stories and people of the past and present”.

Culture and tourism have a mutually beneficial relationship which therefore strengthened the attractiveness and competitiveness of regions and countries. Culture therefore is increasingly an important element of the tourism product.<sup>5</sup> It also creates distinctiveness in a crowded global marketplace. At the same time, tourism provides an important means of enhancing cultural exchange creating income which in turn can support and strengthen cultural heritage, cultural production and encourage creativity. Creating a strong relationship between tourism and culture can therefore help destinations to become more attractive and competitive locations to live, visit, work and invest in.

## **Important Sites of Andhra Pradesh**

### **Buddhist Monuments**

The State Government after considering the tourism potential of at least 22 Buddhist sites out of 150 discovered, selected for developing 3 Buddhist circuits, operational from Hyderabad, Vijayawada and Visakhapatnam. Nagarjunakonda in Hyderabad circuit, Amaravati in Vijayawada circuit and Thotlakonda, Bavikonda, Sankaram and Salihundam in Visakhapatnam circuit are provided with whole lot of tourist amenities. Though, the number of tourists visiting these sites for domestic sector, Government of Andhra Pradesh aims at drawing large number of visitors from Far East Countries. Now Andhra Pradesh State is included in the Buddhist circuits of India.



As the Satavahanas and the Ikshvakus patronized Buddhism, this area has several Buddhist monuments.<sup>8</sup> They were divided into three types, namely, the Stupas, Chaityas and Viharas. Originally these structures were devoid of images but they were gradually included in them. The legends of Buddhism and the mythology of Hinduism provided inexhaustible material to the artists. The Buddhist erected many Stupas from Salihundam near Srikakulam to Nellore, and among them, the Stupa at Amaravati<sup>9</sup> in Guntur district was the biggest and the most famous monument. The Stupa at Bhattiprolu<sup>10</sup> is a wheel-shaped Sariraka Stupa. It is the first example of this model and the later Stupas constructed on the lines of later Satavahana period. The ruins of such Stupas came to light at Chandavaram, Ghantasala, Gudivada, Jaggayyapeta, Goli and Nagarjunakonda. Some Chaityas were also in view at Kondapur in Medak district, Vihara is found at Sankaram near Vishakhapatnam, but it is rock hewn. Kondapur, Ramathirtham, Simhachalam, Bhattiprolu, and Guntupalli are accessible from Vijayawada, while Panigiri and Dhulikatta are close to the State capital-Hyderabad.<sup>11</sup> The massive monolith of Buddha standing 17 meters high on the 'Rock of Gibraltar' in the Hussain Sagar Lake. The installation of the statue is a story by itself.<sup>41</sup> The monolith weighing over 320 tones was literally carted all the way from Raigiri in neighboring Nalgonda District,<sup>12</sup> a distance of 60 km.

The village Nanduru lies about 16 kms to the North of Bapatla in Guntur District. In the year 1930, while digging at the site Mahachaitya was unearthed along with a reliquary. It is very interesting to note that according to some scholars, the Buddhist scholar Aryadeva, the disciple of Acharya Nagarjuna was born at Nanduru. The structures resemble those of Bavikonda, another Buddhist site at Visakhapatnam. The village Pedavegi lies 12 kms North of Eluru town in West Godavari District. In ancient times it is known as Vengipura – capital of Salankayanas. Few Brahmi label



inscriptions were reported from the excavated mound locally known as Dhanamdibba. There are museums at places like Nagarjuna konda,<sup>13</sup> Guntur, Amaravati and Hyderabad that display various Buddhist antiquities and relics gathered during the course of excavations at the various sites. Andhra Pradesh is emerging as a repository of enlightenment as far as Gautama the Buddha is concerned.

### **Rock-Cut Caves**

Moghalrajapuram, Undavalli, Sankaram, Pandavula Metta Monuments built over a period time representing the built and religious heritage of the geographical region also serve as Tourist attractions.

The **Akkanna and Madanna caves** are located enroot the famous Vijayawada Kanaka Durga temple atop Indirakeeladri hill. The rock-cut caves facing east are rectangular and have octagonal pillars. They are named after Akkanna and Madanna who were believed to be ministers in the court of Abul Hasan Tanashah in the 17th century. A short distance away is another cave that dates back to the 2nd century BC, which hosts the Hindu trinity of Brahma, Vishnu and Maheshwara. The cave, facing east, has rectangular and octagonal pillars, and lower cave is triple-celled with pillars.<sup>14</sup>

The **Undavalli caves**, in the village of Undavalli, are at a distance of 8 km to Vijayawada and near the hill overlooking the Krishna River hosts fine specimens of rock cut architectural monuments of the Buddhist period. These caves were excavated in 4th – 5th centuries A.D. These four storied caves with a 5 mtrs long reclining statue of Lord Vishnu sculpted from a single block of granite, is one of the best and earliest type here.<sup>15</sup>



**Moghalrajapuram Caves**, Vijayawada Caves are popular for the three temples in the caves. The cave temples date back to the 5th century. Lord Nataraja and Lord Vinayaka are the two deities whose idols are found in the cave temples of the Moghalrajapuram Caves. The uniqueness of the Moghalrajapuram Caves lies in the Ardhanareeswara Murthy that was found in the cave temples.<sup>16</sup>

### **Jain Monuments**

There are some Jain sites in Andhra Pradesh like Rock Cut Caves at Konakondla in Anantapur District, Brick Temples at Gollathagudi in Mahaboobnagar District; recently renovated Temple at Kolanupaka in Nalgonda District, Jain Temples at Hemavati, in Anantapur District and Yellakonda in Ranga Reddy District that are attracting the tourists.

**Konakondla**, a small village is situated on the roadside that leads to Uravakonda in Anantapur District, Its importance lies in the fact that it served as the domicile of the famous saint Kudakundacharya. On the northern side of the village, Konakondla, there lies a hillock called Rasasiddula gutta (i.e., the hill of the Alchemists). On the summit of the hill is a shrine without any idols. In this shrine are placed two images of 'Tirthankaras' in stiff standing pose (i.e., Kayotsarga). Over the head of each image is the usual Triple Crown or parasol flanked by Sasanadevatas. They seem to belong to 12th Century A.D., as seen from the label inscriptions carved on the pedestals. Towards west, within a short distance is a horizontal piece of sheet rock which bears a caned linear figure of a Jain saint. This measure over 8 feet in length the saint is depicted nude and stands erect on Padmapitha (i.e., lotus base) Close by it are carved on the same rock the foot prints within an ornamental border.<sup>17</sup>



**Hemavati** in Anantapur District was a flourishing Jain centre during 10th Century A.D. The Nollamba-Pallavas as feudal chiefs of later Chalukyas of Kalyana ruled over the region with then capital at Henjern (i.e., modern Hemavati). An inscription from Hemavati informs that the Nollamba, Pallava ruler Mahendra and his son Ayyapa made a gift of land to a basadi and for the feeding of its Tapasvins. At present the Jaina sculptures of Hemavati and the surrounding villages are housed in a Museum at Hemavati. Among them, one sculpture of Mahavira carved exquisitely in Dhyanamudra and flanked by two cowry-bearers. Above the head of Mahavira is a usual parasol. Below is a freeze of Lions representing the lanchana of Mahavira. It exhibits the typical architectural features of the early Nollamba-Pallava family (i.e., 9th Century A.D.)<sup>18</sup>

## **Forts**

Forts as heritage structures are considered as Tourism Products for cultural tourists. The Andhra Pradesh State has many forts and fortifications built between the 4<sup>th</sup> Century A.D. and 17th Century A.D. Each Fort has its own feature to attract Tourism. There are mud, stone and brick forts in Andhra Pradesh. The following is a brief account on select Forts of Andhra Pradesh.

**Penukonda Fort** is 50 kms from Anantapur. Penukonda is well connected by road from Anantapur. The fort has seven rounds of walls constructed round the Penukonda hillock. Round the Penukonda town one strong fort wall was also constructed. Outside of the fort there were moats and ditches. In the waters they used to rear the crocodiles for the non-entry of enemies. But there were mainly four entrances to enter into Penukonda. Throughout the fort walls there were battlements which were used for the viselike hold of the town. Now only Rama and Laxmana battlements are existing. It was constructed with stone by mixing lime and clay.<sup>19</sup>



**Gandikota Fort** Located at a distance of 77 kms From Cuddapah and 15 kms from Jammalamadugu, is well connected by Rail & Road. Gandikota is on the Right Bank of the river Pennar in Jammalamadugu taluk of Cuddapah district, Andhra Pradesh. It is the famous fort of Gandikota, which acquired its name obviously due to the gorge, formed between the Erramalai range of hills, also known as Gandikota hills and the river Pennar that flows at its foot, reducing its width to a mere 300 ft. Situated amidst beautiful landscape and wild forests, it is endowed with great potentialities for natural tourism.<sup>20</sup>

**Udayagiri Fort** is situated at 78 kms from Nellore. It is famous for the great hill fort, perched on the hills of Kondayapalem situated nearby. It's strategically importance lies in the fact that it controlled the eastern frontier of the mighty Vijayanagara Empire, and proved to be a bone of contention among the three super powers of the period i.e., The Rayas of Vijayanagar, the Bahmanis of Gulbarga and the Gajapatis of Orissa. The hills of Udayagiri on which lies the fort rise to a height of 3079 ft. above the sea level. Its geological formation is gneiss, with upper deposit quartzes. The fortifications are in a fair state and the ascent is about five miles. Most of the hills are under thick forest system, grouped as reserve Forest and hence inaccessible. The fort is not visible from outside and appears to be both a Vana (forest) and Giridurga (hill fort). The existing fortifications reveal only Islamic features.<sup>21</sup>

**Chandragiri Fort** Located 13 kms from Tirupati. The temple town, Chandragiri Fort is a formidable structure. It is believed that Chandragiri was the headquarters of Vijayanagara Empire and capital from about 1592. The two structures called the Raja Mahal & Rani Mahal are constructed entirely of stone and brick, stone is used in place of wooden beams and are in the Indo-Seracenic Style. These Mahals seem to belong to the 16th or 17<sup>th</sup> century. The fort area has about 10 shrines, all in the Vijayanagara Style of architecture. The fort was



probably raised during the period of Saluva Narasimha and the places and temples under Sri Krishna Devaraya and his successors. The fort stands on a huge rock, which is about 60 mts high.<sup>22</sup>

**Kondapalli Fort** is about 16 kms from Vijayawada. The fort is built on a hill which is surrounded by forests all around. This fort was constructed by Prolaya Vema Reddi, during the Kakatiya regime. The king used to visit this fort for relaxing and recreation. It was a residence of "Bhogamalas" meaning the courtesans of the kings. Nearby the palace there is a dargah of Gaeab Saheb. He was a Persian saint who settled here.<sup>23</sup>

**Gooty Fort** is place can be reached from Anantapur which is at a distance of 52 kms on the Kurnool Bangalore trunk Road. Gooty village is located on the slopes of a hill. The citadel is constructed on the western most periphery of the hillock. It is approached by paved path leading first to an outlying spur strongly fortified. The fortification includes walls connected by 14 gateways and a series of bastions. There are a number of wells. One of them is believed to have been connected with a stream at the foot of the hill.<sup>24</sup>

**Kondaveedu** is place famous for an ancient historic fort of Andhra Pradesh. In its hay days, Kondaveedu fort was a prominent kingdom of the Reddy Dynasty. There are nearly 21 Stupas adorning the fort. A temple of Gopinatha (Lord Sri Krishna) and Kathulabavi (well of swords) at the foot of the hillock with many other temples, some residential structures of the kings are other good places to get the glimpse of the past. There are other attractions once you climb the hill like the pillared hall and the entrance gateway on east and west side of the fort. Today, this place provides the natural scenic beauty. It also offers you a good trekking experience. Kondaveedu is approximately 25Km from Guntur.<sup>25</sup>



## Museums & Art Galleries

Museums are categorized according to the nature of the collections, and the more attractive they are to different audiences, the number of visitors they will be able to attract. Eager to learn about something completely new and original, tourists prefer to go to these museums that represent the history, culture and traditions of the host country. Museums are the repositories of the cultural relics of an area. The various galleries of the Museums display artifacts/objects representing the history of mankind, its life style, technological and economic preferences and other anthropological matters.<sup>26</sup>

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## JOB RECRUITMENT PROCESSING SYSTEM THROUGH HADOOP MULTI NODE CLUSTER USING MAPREDUCE

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**Abstract**— Many organizations have been receiving the large number of applications from the job seekers to apply for the job. The job applicants send their applications mostly in the form of word documents and PDF documents. When there is a need of the candidates specialized in particular area of skills, it is very difficult to find the suitable person from all these unstructured data files. The main aim is to reduce the time in the steps required to select the suitable candidate in job recruitment process. The data stored in the database is need to be simplified so that the recruitment process will be very easy. This stored job applications can be processed and analyzed using the Hadoop environment with a single node will take more time.

Here the proposed system is setup with cluster of computers using the Hadoop environment. The Hadoop provides the HDFS to store the data in a Distributed File System (DFS). The MapReduce can be used to process the data and convert the unstructured PDF documents into semi structured file format such CSV format. These semi structured files can be stored into HIVE database to provide the structured file format. The structured files can be used to analyze the data by applying the queries. And also the will be send to the particular candidates informing the further steps in recruitment process.

**Index Terms**—Big Data, Unstructured data, Hadoop, MapReduce, Hive, Job Application Processing, Email.

### I. INTRODUCTION

T

HE **Big Data** is one of the biggest challenges in figuring out how they were going to store all the. The IT industry is always developing new technologies [3], and big data is the one of them. With the developments of the cloud storage, big data has attracted more and more attention. Due to the emergence of the Internet, the big data technology will accelerate the innovation of the

enterprises, lead the revolution of the business mode and create unlimited commercial opportunities. When such large volumes of data can be analysed in a single context, certain kinds of trends can become visible that otherwise would remain hidden. Big data is too new a concept for programmers, database administrators and analysts to have developed a consistent methodology for deriving patterns and reports yet, but that work is in progress.

Big Data needs a new processing model which has the better storage, decision-making, and analysing abilities. This is the reason why the Big Data technology was born. The Big Data technology provides a new way to extract, interact, integrate, and analyse of Big Data. The Big Data strategy is aiming at mining the significant valuable data information behind the Big Data by specialized processing. In other words, if comparing the Big Data to an industry, the key of the industry is to create the data value by increasing the processing capacity of the data.

Big data has the many characteristics such as volume, velocity, variety, veracity, validity, and volatility.

- Volume: The size of the data is very large such Giga bytes or Tera bytes.
- Velocity: The flow of data is massive and continuous.
- Variety: Refers to many sources and types of data both structured and unstructured.
- Veracity: Refers to the trustworthiness and accuracy of data.
- Validity: Valid data is the key to make the decisions.
- Value: Value can include understanding customers better, targeting them accordingly, optimizing processes, and improving business performance.

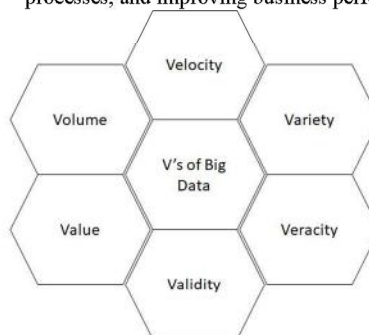


Fig. 1. V's of Big Data



The unstructured data [1] is difficult to understand so that it has to be processed and transformed into structured format. The unstructured data is in different formats like PDF files, text files, e-mails, images, documents, video, audio, etc. The management of unstructured data is a very large problem. We need to transform the unstructured data into structured form to analyse it so that it is very easy to manage and can be used to take decisions in future.

A Hadoop cluster [9] includes a single master and multiple worker nodes. The master node consists of a Job Tracker, NameNode, Resource Manager and a Secondary NameNode. A slave or worker node acts as DataNode and TaskTracker which has Node Manager. HDFS nodes are managed through a dedicated NameNode server to host the file system index, and a secondary NameNode that can generate snapshots of the Namenode's memory structures, thereby preventing file-system corruption and loss of data. Similarly, a JobTracker server can manage job scheduling across nodes.

#### A. Challenges of Big Data

- Need for synchronization across different data sources
- Critical shortage of professionals who understand big data analysis
- Getting meaningful insights through the use of big data analytics
- Getting voluminous data into the big data platform
- Uncertainty of data management landscape
- Data storage and quality
- Security and privacy of data

## II. LITERATURE REVIEW

Literature survey is the basic step in preparing the new methodology for the particular area of subject. Many researchers have been made their work on the latest advancements in the technology for the improvements in the conversion of unstructured data into structured format. This conversion will help the user to take decisions by applying the queries on the structured data.

#### A. Objectives of literature survey

- To study the problems in increasing volume of Big data
- To study the unstructured data like PDFs and how to convert the unstruct data to structured format.
- To study the job application processing for selecting

the required candidate who is suitable for the job.

- To study the advanced technology such as Hadoop for handling the unstructured data.

To study the structured data for taking the decisions by applying the queries.

The size of unstructured data [1] is increased with the time from social media sites like Facebook and Twitter. The large volume of data [2] will be processed in parallel as small chunks in distributed clusters. Finally integrate all the resultant data across the cluster to obtain the desired processed result. The technique used here is MapReduce to perform filtering and aggregation. Big data is a large dataset with the characteristics [17] such as volume, velocity, veracity, variety and value in a relationship to each other. Hadoop MapReduce divides the large problem into smaller tasks and all are processed on a Hadoop cluster [11] in parallel under the control of JobTracker.

The main importance of Business Intelligence [3] is a vital role for collecting, integrating, analysing and transforming the data for effective decision making process.

Data represented in PDF format is convenient for people to retrieve and reuse in other applications automatically. Information retrieval [4] is the task of retrieving relevant information from the PDF document. The system retrieves different kind of data and information from whole PDF files. The integration [5] of structured columns with the unstructured data by converting them into schema structure, only we can apply the queries [6] for useful information and knowledge. The 80% of the data generated on the social media [7] are unstructured and without conversion there is nothing to do with it. Unstructured data is in the form of flat files. Knowledge discovery is a great process to find the hidden patterns in the data.

MapReduce [8], [9] is a technique in Hadoop for processing the large datasets. The cluster [11] provides the two types of operations such as Map and Reduce. Between the Map operation and Reduce operation, there is an important operation has been taken place such as shuffling operation. The shuffling operation will increase the scalability and efficiency of the processing in big data environment. Sequential execution of data leads to the time consuming task and takes more time for taking decisions based on the statistical data.

The job application processing [12] is choosing the most qualified persons suitable for the company job profile. A job application support system helps the company to recruit the candidate. It reduces the manual process of short listing the resumes for the recruitment

process. Talent acquisition [13] which is required for the selection of the right person for suitable job. There are many Bid Data technologies [14] available now a days for the processing of large amount of data. Here the step by step process of execution of the dataset. The first and second steps are the loading and cleaning the data. The loaded input file is converted into CSV file as semi structured data. Then this file can be stored in to the HIVE database in structured format as a third step. The final step is the visualization of the results using any of the visualizing tool.

### III. DESIGN AND METHODOLOGY

The following figure 4.1 shows the Hadoop system architecture with one master node and three slave nodes. A network switch that connects all the nodes such as master node and the slave nodes. Communication among the nodes will be enabled by the network switch. User interaction with the master node is shown in the diagram. The data assignment and task assignment are also depicted in the following figure. The replication of the data in the data nodes are indicated clearly in the following diagram. Each data node has two processes such as Map and Reduce. Each data node has also contains the TaskTracker. And the master node has the JobTracker.

#### A. Major components of Hadoop

- **Namenode:** The Namenode is the centrepiece of an HDFS file system. It keeps the directory tree of all files in the file system, and tracks where across the cluster the file data is kept. It does not store the data of these files itself.

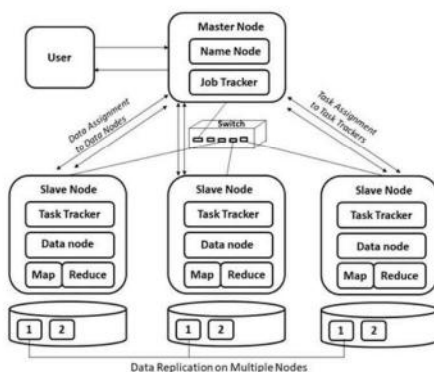
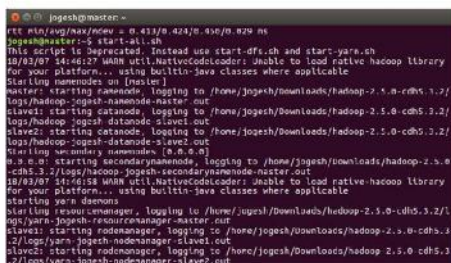


Fig. 2. Hadoop System Architecture

#### IV.

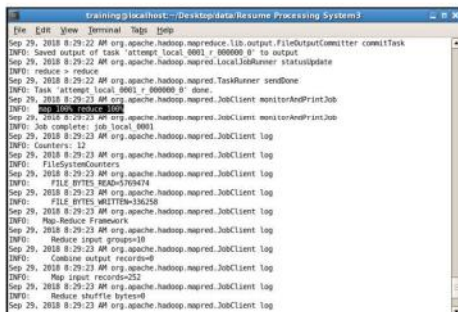
- **Secondary Namenode:** Stores a copy of FsImage file and EditLog. FsImage is a point-in-time snapshot of HDFS's namespace. Edit log records every change from the last snapshot. The last snapshot is actually stored in FsImage. Periodically applies edits log records to FsImage file and refreshes the edits log. And sends this updated FsImage file to Namenode so that Namenode doesn't need to re-apply the EditLog records during its start-up process. Thus Secondary Namenode makes Namenode start up process fast
- **Datanode:** A Datanode stores data in the Hadoop File System. A functional file system has more than one Datanode, with data replicated across them. On start-up, a Datanode connects to the Namenode; then responds to requests from the Namenode for file system operations.
- **JobTracker:** The JobTracker is the service within Hadoop that farms out MapReduce tasks to specific nodes in the cluster. A TaskTracker will notify the JobTracker when a task fails. The JobTracker decides what to do then: it may resubmit the job elsewhere, it may mark that specific record as something to avoid, and it may even blacklist the TaskTracker as unreliable.
- **TaskTracker:** A TaskTracker accepts tasks such as Map, Reduce and Shuffle operations from a JobTracker. Every TaskTracker is configured with a set of slots; these indicate the number of tasks that it can accept. When the JobTracker tries to find somewhere to schedule a task within the MapReduce operations, it first looks for an empty slot on the same server that hosts the Datanode containing the data, and if not, it looks for an empty slot on a machine in the same rack. The TaskTracker also send out heartbeat messages to the JobTracker, usually every few minutes, to reassure the JobTracker that it is still alive.
- **MapReduce:** It can be explained in three crucial steps such as Map, Shuffle, and Reduce. During the Map step, the map () function is applied to the input data and its output is stored in a temporary location. During the Shuffle step, data is distributed on the basis of the output keys which were produced by the map () function in the previous step. The data is distributed in such a manner that data which belongs to a specific key is located on the same node. During the Reduce step, the output data is processed in parallel with respect to the specific key.
- **Hadoop Distributed File System (HDFS):** Hadoop File System was mainly developed for using distributed file system design. It is highly fault tolerant and holds huge amount of data sets and

Fig. 3. Starting the Hadoop Cluster

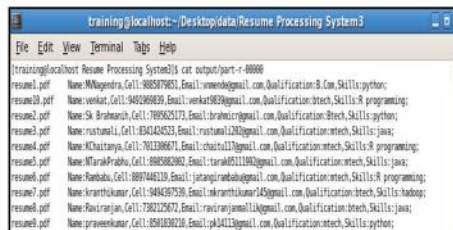


#### A. Conversion of Unstructured Data into Semi Structured

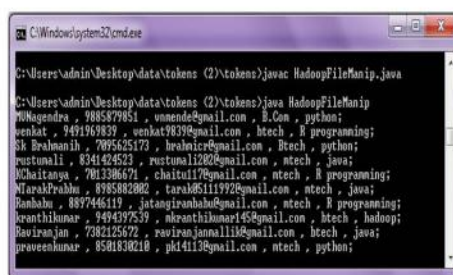
VI. The conversion of unstructured PDF job applications has been shown in the following screen. The following command executed the conversion operation.



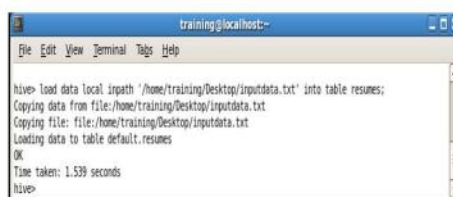
1. After completion of the execution the output will be as follows.



2. The after the required data has been retrieved from the unstructured documents, there is a need to simplify the output file before sending into the HIVE data base. After the simplification is performed the result will be as follows.



3. Create the table in the HIVE database with the required fields and load the data into the database.



4. After loading the data into the database, any queries can be applied to retrieve the required data. Here displaying of all the details who are applied for the job.

```

training@localhost:~$
File Edit View Terminal Tabs Help
hive> select * from resume;
OK
M/Nagendra NULL vnmendes@gmail.com 8.Con python;
venkat NULL venkat9839@gmail.com 8.tech R programming;
Sk Brahmanth NULL brahmrc@gmail.com 8.tech python;
rustumLi NULL rustumLi262@gmail.com mtech java;
KChaitanya NULL chaitu17@gmail.com mtech R programming;
NitarakPrabhu NULL tarak05111992@gmail.com mtech java;
Rambabu NULL jatangiRambabu@gmail.com mtech R programming;
Kranthikumar NULL mkranthikumar145@gmail.com mtech hadoop;
Raviranjana NULL raviranjana14@gmail.com mtech java;
praveenkumar NULL pk14113@gmail.com mtech python;
Time taken: 8.612 seconds
hive>
    
```

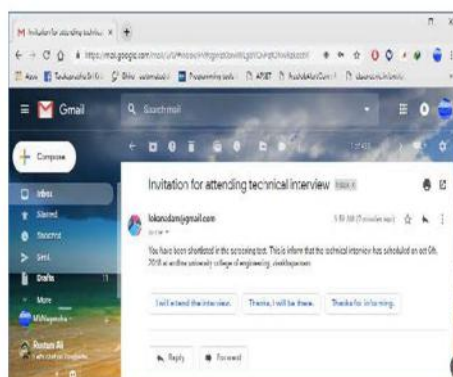
#### D. Sending Email

5. And also the mail will be sent to the candidates for attending the further steps in the job recruitment process. After the mail has been received the candidate will attend to the venue provided.

```

C:\Windows\system32\cmd.exe
C:\Users\vadim\Desktop\data>tokena)set classpath=classpath;C:\Users\vadim\Desktop\data>tokena)java Mail
C:\Users\vadim\Desktop\data>tokena)java Mail
Email sent successfully.
C:\Users\vadim\Desktop\data>tokena)
    
```

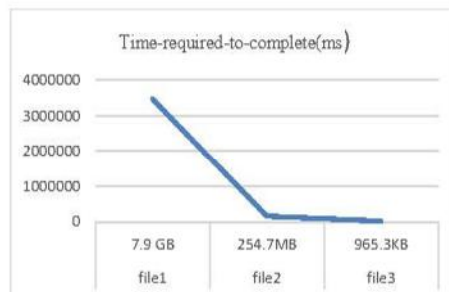
6. The mail which is received from the organization for the recruitment process is as shown below.



The result analysis of the data run on different sizes on the cluster is shown below. If the size of the file is small, the cluster execution time is low when compared to the large volume of data.

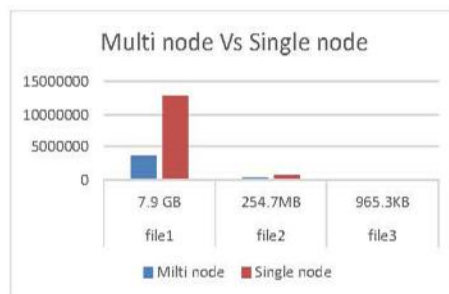
#### A. Different sizes with time taken to complete

| File name | Size    | Time required to complete(ms) |
|-----------|---------|-------------------------------|
| file1     | 7.9 GB  | 3468997                       |
| file2     | 254.7MB | 160539                        |
| file3     | 965.3KB | 13146                         |



#### B. Single node vs multi node

| File name | Size    | Multi node | Single node |
|-----------|---------|------------|-------------|
| file1     | 7.9 GB  | 3468997    | 12885928    |
| file2     | 254.7MB | 160539     | 632654      |
| file3     | 965.3KB | 13146      | 51312       |



## VII. CONCLUSION

VIII. The system takes the input as unstructured PDF job application documents and convert them into semi structured format as CSV file format. The conversion is performed by the Hadoop environment with the help of MapReduce. The converted CSV file has the required fields such as name, qualification, skills, experience, mobile number, and email id. Then the CSV file is then



stored into the HIVE database for applying the queries for further analysis. And also the mail will be sent to the candidates for attending the further selection procedure. The main aim is fulfilled to simplify the recruitment procedure in IT industry struggling to process the job applications manually. This has been possible with the Hadoop multi node cluster setup with MapReduce.

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## **SOCIAL WELFARE SCHEMES AND WOMEN EMPOWERMENT IN TAMIL NADU - A STUDY**

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In most parts of Tamil Nadu, women occupied a very low status in medieval and early modern society. Lack of educational facilities, child marriages, prohibition of widow remarriages, prevalence of Devadasi system, etc. were some of the social factors responsible for the low status and misery of women who were reduced to the position of glorified slaves but industrialisation and urbanisation in the state made significant development in the areas of women's empowerment and social development<sup>1</sup>. In Tamil Nadu, women were engaged more in agriculture than in manufacturing or service sector. In the manufacturing sector, women worked as beedi workers and as manual labour for cotton textiles, fish, and food processing and match industry. A few were involved in the manufacturing of electronic and electrical goods.

In a traditionally conservative society like Tamil Nadu, risk-aversion was common. Women were further a step behind the average man, having to contend with gender barriers in financial institutions, discouragement in families, lower levels of education and confidence. The position of rural women in the state has remarkably changed with the formation of SHGs, which started on an experimental basis in 1989 in the rural areas. It helped poor rural women to enter the entrepreneurial world and it also helped them to develop self-confidence, communication, independence, mobility,<sup>2</sup> management and technical skill. Assisted by some NGOs and with a little government



support, this movement gained momentum and developed into strong local institution. They have provided legitimate avenues for social mobilisation with access to inputs, such as training, banking services, government services, etc. Most of them in the informal sector are now running micro enterprises or home-based production units such as basket making, mat weaving, beedi making, lace making and the production of agarbathi, candles, garments, telephone mats, handicrafts, paper dice, ink, soaps, washing powder, snacks, fruit juices, pickles, jams, squash, vattal, and other household items etc.<sup>3</sup>

### **Social Action**

The most significant achievements under the programme has been in social aspects. SHG members are now recognised by their family members and by the village as groups of women with a common mission, unity and civic sense. Mathi has teamed up well with NGO partners in bringing awareness on important issues of local relevance like eradication of illicit arrack, help for widows, deserted women and the aged, eradication of early marriage, female infanticide.<sup>4</sup>

### **Women Recreation Centers**

Women particularly belonging to the poor sections of the society were denied opportunities for recreation and change. This need remained without being noticed even on paper. During the year 1997-98, this need was recognised by DeW and on an experimental measure, the idea for opening and operating 50 Women Recreation Centres was approved by the Government of Tamil Nadu and implemented, in the five IFAD districts of Dharmapuri, Ramnad, Madurai, Salem and Villupuram and 10 WRCs were sanctioned and made operational in each district. Depending on needs,<sup>5</sup> the women were allowed to choose recreational materials like newspapers, magazines, play material, radio, tape-recorders, furniture and to operate the centre from convenient locations like noon-meals centres or balwadis. These centres have been



a place for relaxation for the SHG women. Based on the success of these centres, Government of Tamil Nadu granted permission for opening 100 centres during 1999-2000, and these were distributed to all districts where Mathi was operational. Each centre is granted a sum of Rs 3,100/- for creating the fixed assets and additionally Rs 1,100/- per annum is allotted for meeting their recurring expenditure. Dew plans to conduct an independent evaluation of this programme in 2000-2001 to assess the impact and to suggest further innovations.<sup>6</sup>

### **Administration**

Quality of assistant project officers has taken an upswing after focusing on extension-oriented departments as sources of recruitment. Posts sanctioned under government order have been filled up at PIU & PMU. Two jeeps have been provided to seven districts for the successful implementation of the Mathi in 1999-2000. The training hall in the first floor at PMU has been fully air-conditioned and provided with training equipment. This has drastically improved the environment of review meetings.<sup>7</sup>

### **Information Technology**

Computerisation radically increases the speed of decision making while providing leads for future action and innovations. The Integrated Monitoring and Information System (IMIS) has been designed in consultation with National Informatics Centre (NIC), implemented to review and monitor the implementation of the various projects of Tamil Nadu Corporation for Development of Women Ltd. on a continuous basis.<sup>8</sup> Dew has computerized a wide range of activities and is in the process of expanding use of computer based information systems, both at head office level and at its district offices for the better implementation of the projects. The PMU at Chennai has a local area network on Windows NT operating Systems with a node given to every section and officer. The PMU has also procured a high quality video



projector for making presentations at large workshops and meetings. Procurement of additional clients to provide computing facilities to the majority of assistants is under way.<sup>9</sup>

### **Changes in the Condition of Women**

But modern women groups and technological changes have brought many changes in the life of women. Their position slowly improved day by day. They gained social importance, cultural reputation, political stability. All these because of their desire and ability of women groups. They are described in the following pages. Slaves can be made free, but a slavish mind cannot be freed. They do not have any idea of the existence of the world of freedom. That is why women have been described as frogs in the well. A person who is conscious of his bondage desires liberation. How can anyone who is oblivious of the chains that blind her desire freedom? That is exactly the position of women yesterday and even in some extent today.<sup>10</sup>

Do the women take advantage of the privileges and rights conferred upon them by the constitution and the laws of the land? Equality is proclaimed in principle but inequality reigns supreme in practice. Women themselves do not evince any interest over the laws enacted about 30 years ago for women's welfare and progress. How many women are undertaking the responsibility for successful implementation of laws promulgated for their social and economic uplift? Women do have property rights but in reality these rights are denied to them.<sup>11</sup> These rights just do not exist for them. How many women are there who can spend their income as they please even against the will of their husbands?

### **Social Status of Women**

Society looks at a woman who seeks divorce with dismay and disgust. The abhorrent feelings of the society in this respect are beyond description. Even in the case of adultery, the society calls the woman



deprived and downfallen. She is compared to a broken pot. But the same attitude is not shown towards a man. He is unblemished. He can marry, beget children and be blessed with happiness. Here is the greatest inequality. Here is the greatest injustice to women. If the woman is barren, efforts will be a foot to get the husband to remarry. But then, a woman who seeks divorce on the ground of the impotency of her husband and who longs for motherhood becomes an outcaste in any society.<sup>12</sup> As per law, the giver and the receiver of dowry are both punishable. But it has become a custom to offer dowry and to receive it. It has become a rigid tradition. Is there anyone who has taken action against those who transgressed the anti-dowry act? There is only a single case of prosecution, Laws and rules which do not change the attitude of men and women are nothing when they merely adorn the law books. When a child is born the question that is inevitably asked is 'whether it is plus or minus? Obviously it implies that a male child brings benefit and a female child results in loss. So long as such inequality exists in the society, the problem of dowry will defy solution. It is not far from wrong to say that it is women who sustain this inequality.<sup>13</sup> On the pretext that they are being forced to offer dowry for marrying off their daughters many women demand dowry for their sons. There is absolutely no doubt that women's attitude by itself is the root cause of the backwardness.

They are easily vulnerable to diseases of the eye and even T.B. Even in the matter of observance of customs born out of caste and religious differences, a woman's perseverance is greater than man. Progress do not need in terms of clothes and manners but in the cultivation of personality and individuality. A society that denies awakening and enlightenment to women, who constitute half its number, is like a building without a foundation. Without a philosophical or mental revolution among the women there cannot be



any social change. There must be a fundamental change on a national level.<sup>14</sup>

### **Women's Economic Role**

According to anthropologists, women were the major producers of food, clothing, crafts, many different tools through most of the human history. In fact, this continues to be so in all those societies of the world where production is mainly for subsistence and not for sale. In India too, growing food, processing it,<sup>15</sup> spinning and weaving, basket making, clay modeling, extraction of 'soma' juice, preparing perfumes and many other materials for consumption were women's contribution. References to women's economic activities are extremely sparse in Indian history and even for the middle age where much historical research by eminent historians like Irfan Habib or Bipin Chandra have helped to build a British inroads into India, women's role find no mention and whatever information can be gathered has to be by inference. The first records begin with the British. There were travellers' accounts, various administrative documents and finally the census. In the census records we get for the first time some rough quantitative estimates that tell something of the range and degree of the economic involvement of women. These documents are not accurate but they happen to be only source.<sup>16</sup>

### **Organisations Promoting Women Entrepreneurship in Tamil Nadu The Integrated women Development Institute**

The institute was set up in 1989 to uplift women and girl children from the distressing situations they encounter, by setting up income generating programmes for deserving women to become self-employed.<sup>17</sup>



## **The Tamil Nadu Corporation for Development of Women Ltd**

The Corporation was set up on 9th December 1983 under the Companies Act, 1956 to focus on empowerment of women to encourage entrepreneurship among women, to identify trade and industries suitable for women, to undertake marketing activities for products manufactured by women and encourage women to form SHGs through giving training and extending credit facilities.

### **Women Entrepreneurship Promotional Association (WEPA)**

WEPA functioning in Chennai is an association of women entrepreneurs, providing training to women in various fields. The association also conducts exhibitions for the members and assists in marketing of the products of members.

### **Marketing Organisation of Women Entrepreneurs (MOWE)**

MOOWES provides comprehensive support to women entrepreneurs to achieve success in the business. Its main aim is to ensure women in marketing their products through exhibitions and thus provide an opportunity to tour the country also.<sup>18</sup>

### **Schemes for Women Entrepreneurship in Tamil Nadu**

Indira Mahila Yojana (IMY) is a scheme aims at organizing women at grass root level to facilitate their participation in decision - making and their empowerment. The scheme was launched in 1995 on pilot basis in 200 blocks over a strategy to coordinate and integrated components of sectoral programmes and facilitates their convergence to empower women.

### **Vocational and Skill Development Programmes**

The major focus of the Tamil Nadu Corporation for Development of Women has been to provide support to economically disadvantaged women. The Corporation is funding entrepreneurial



programmes, which is opened to all potential women entrepreneurs, preferably first generation. The programme was commenced in 1998-99, which is conducted by the Industry and Commerce at Chennai and Madurai.<sup>19</sup>

### **Mahalir Thittam**

Mahalir Thittam a participatory, people centred and process oriented project, was started in 1997-98 which is directed towards empowerment of women and capacity building of poor women in rural areas through SHGs. It covers the entire state of Tamil Nadu. Currently the coverage extends to rural areas of all the 30 districts of Tamil Nadu. It is an unusual long term partnership between three agencies, the state government, non-governmental organizations and banks (including NABARD) and other financial institutions. It provides inexpensive and timely credit to SHGs, training for the development of communication skill and entrepreneurship development training.<sup>20</sup> It facilitates to participate in exhibitions, collective negotiation bargaining, emergence of structures like marketing unions and dissemination of information about markets.

### **Support to Training and Employment Programme for Women (STEP)**

The Programme of STEP was launched in 1987. It aims to upgrade the skills of poor and assetless women to mobilise, conscientise and provide employment to them on a sustainable basis in the traditional sectors of agriculture, small animal husbandry, dairying, fisheries, handlooms, handicrafts, khadi and village industries and sericulture, social forestry and waste land development. The Government of Tamil Nadu has stressed the need to augment resource for such programmes.<sup>21</sup> Women entrepreneurs particularly, the first generation women entrepreneurs, face many constraints particularly paucity of margin money assistance to start their ventures by getting



finance from the financial institutions. To overcome the difficulties experienced by these entrepreneurs, the government has sanctioned a sum of Rs. 30 lakhs to give the first generation women entrepreneurs a subsidy of 10 per cent margin money support to the project cost support to the project cost subject to a ceiling of Rs. 50,000/-.

### **Anna Marumalarchi Thittam**

Government of Tamil Nadu has implemented Anna Marumalarchi Thittam for the promotion of agro based food processing and other related industries in rural areas to generate rural employment and thereby improve the rural economy. The projects which have commenced production includes food products like mango pulp, fruit pulp, edible oil refining, chips and agro based projects like modern rice mill using polisher and colour sorter etc. The other projects include cold storages, manufacturing of eco-friendly products of coir such as coir pit block, herbal products like allovers gel, herbal medicines, eucalyptus oil, export oriented aqua-culture items like shrimp,<sup>22</sup> fresh water prawns, floriculture products like flower concentrates from jasmine, export oriented horticulture products like cut flowers, etc. In order to enthuse the potential investors in the district to take up industrial venture in agro based and food processing sector in rural areas, the government has ordered a special entrepreneurship development programme through reputed training institutions like Central Food Training and Research Institute, Mysore, Tamil Nadu Agriculture University, Coimbatore, National Institute of Small Industries Extension Training, Hyderabad.

### **The Tamil Nadu Women in Agriculture Project (TANWA)**

The Tamil Nadu Women in Agriculture Project (TANWA) assisted by the Danish International Development Agency (DANIDA) is introduced in Tamil Nadu in 1986 for involving the women in the agricultural activities through package of services rendered to them.



The first phase of the project covered two districts namely Tirunelveli and Sivagangai over a period of seven years ending 1993.<sup>23</sup> The scheme was extended to all the districts except Chennai. The prime objectives of the project are to expose the farm women to a package of 10-12 skills relevant to them in crop production and related activities and to enable them to choose and adopt relevant agricultural practices; to spread agricultural knowledge and skills from TANWA trainees to non-trained fellow farm women and to improve the access to existing agricultural extension services for women belonging to small and marginal holdings.

### **Financial Institutions assisting women Entrepreneurship in Tamil Nadu**

In Tamil Nadu, Tamil Nadu Industrial Cooperative Bank Limited, Tamil Nadu Industrial Investment Corporation (TIIC), Tamil Nadu Adi Dravidar Housing Development Corporation (TAHDCO), regional rural banks, public sector banks, private sector banks, etc. provide financial assistance to women entrepreneurs. Some banks have a Mahila Banking Branch which is meant mainly for women and managed by women.

#### **Tamil Nadu Industrial cooperative Bank Limited (TAICO Bank Ltd)**

TAICO Bank Ltd was established in 1961 for providing credit facilities to the Industrial Cooperative Societies. The bank also extends loan assistance to SSI tiny sector, small road transport operators and traders. The Reserve Bank of India has recognised the TAICO Bank to provide credit facilities to the Industrial Co-operative Societies under NABARD refinance scheme.

#### **Tamil Nadu Industrial Investment Corporation (TIIC)**

TIIC was incorporated in 1949 as a banking company under the Companies Act. It is a premier financial institution that fosters



industrial development of Tamil Nadu. It provides financial assistance to tiny / small / medium / large scale industrial units, professionals and vehicle operators. Under the general scheme, loan assistance is provided for small and general scheme, loan assistance is provided for small and medium scale industrial units to set up new industries and expansion / modernisation / diversification of the existing units.

### **Mahalir Thittam Vision**

The Tamil Nadu Women's Development Project under the name of "Mahalir Thittam" or Mathi is a replication and phased upscaling of the TNWDP successes to cover about 10 lakh poor women of the state over the project period. Announced in 1996-97, it standard operations in 1997-98. The project has completed three financial years of operation. This project is intended to promote economic development and social empowerment of poor women through a network of SHGs formed with the active support of NGOs. The scheme based on the Tamilnadu Women's Development Project (TNWDP) experiment, adopts positive collective learning, while casting away many of the shortcomings seen in TNWDP.

The "SHG revolution" as it may be termed has been instrumental in assimilation and dissemination of knowledge about health, nutrition, literacy, women's rights, child care, education, adoption of new agricultural practices, and non farm sector economic activities etc., and has paved the way for increased participation of women in decision making in households, community and in the local democratic setup, besides helping to prepare women to take up leadership responsibilities.<sup>23</sup> Building a satisfactory working relationship with project partners is an important step in building capacities of the poor. Sensitising project staff to handle such partnerships is a major requirement for government staff, not very familiar with partnership-building, especially outside government.



Project officers and assistant project officers are oriented before being put on the job. Training inputs were provided on team building, communication skills, time management, etc.

NGOs are the hub of the project doing bulk of the field-work. Project staff have benefited by interaction with NGOs leading to adoption of participatory practices, besides leading to change in attitudes. Some of the established NGOs like MYRADA (Bangalore) have helped in conduct of training programmes. District level training programmes invariably use local NGOs as resources. Banks are the most important partners. During 1999-2000 steps have been taken to build top-level contacts and relationship. Meetings were held with the Executive Director and General Manager of Canara Bank, Indian Bank, Indian Overseas Bank and Central Bank of India. Presentations have been made at the monthly meetings of bankers. This has helped in sorting out issues and doubts. Excellent working relationship has been built up with the State Level Bankers Committee (SLBC) and this has been instrumental in getting quick clearance of the SLBC for SHG. The National Bank for Rural Development (NABARD) has been an important ally in the project NABARD, in every district is a natural resource person and have been involved in bankers training programs in 1999-2000. NABARD representatives have played a key role in drafting the SHG Credit Guidelines in 1999-2000 besides liasing with branch managers in case of difficulties in opening of SHG accounts or sanction of credit. Participation of women in the process of development has been a step forward in 1999-2000. Block Level Co-ordination Committees (BLCC) representatives amongst SHG women have been made permanent members of the District Project Coordination Committee (DPCC) headed by district collectors. SHG women are the primary and natural partners and hence it has been decided to increase their participation in the implementation of the project.<sup>24</sup>



## Convergence with other Departments

Convergence with the State Resource Centre (SRC) for adult literacy to SHGs has been initiated. Videos and books developed by SRC have been distributed to PIUs and NGOs have been asked to make use of it. Linkage between Continuing Education Centre (CEC) in villages established in 9 districts under the Arivoli program has been initiated in some districts. A major impact of women becoming SHG members is elimination of thumb impressions in many SHGs. Convergence with rural development has yielded rich results. A round of training for Block Development Officer (BDOs) and other block extension staff has been initiated during 1999-2000. This has helped sort out misgivings and confusion in the roles of each department, besides making these staff SHG friendly. A further intensification of the training process is planned for Rural Welfare Officers, Mukhya Sevikas (MS) and Gram Sevikas (GS).

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## PHYTO CHEMICAL STUDY AND ALLELOPATHIC ACTIVITY OF PONGAMIA PINNATA LEAVES

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### Abstract

The aqueous leaf extracts of pongamia pinnata inhibitory effects on seeds germination shoot length, root leaf area of yield and crop's. especially on green gram (vigna radiate) Bengal gram (cicer arietinum). The inhibitory effects of these crop plants is direct to the increasing concertations of a stem, leaf, extract of pongamia pinnata leaves from the seeds of green gram (vigna radiata) Bengal gram (cicer arietinum) are as identified. These compounds pongone, galbone, ponagagallone-A,ponagagallone-B, identified by nmr, mass, IR Analysis. The results revealed that the inhibitory effect must be due to the presence of these chemical compounds.

**Key Words:** Allelo chemicals, column chromatography, phytotoxic substances .



## Introduction:

The term allelopathy has most often referred to the activity of the chemicals on other plants or micro organisms. Many of these chemicals present in the plants called phytotoxic substances are responsible for the germination and soil. The chemical compounds is released in to the environment in a fined quality through root exudation. Most of these are phenolic compounds and activity participated in allelopathic activity and this process impact on the plant growth & germination. Plants are generally produce secondary metabolites like phnols alkaloids, terpenoids, tannis, fats, steroids etc. these compounds are having allelopathic effect on the growth & development of some plants or neighbouring plants.

In the present work an attempt has been made to study the allelopathic effect of pongamia pinnata aqueous leaves extracts on the growth and yield of the green gram(*vigna radiata*) and Bengal gram(*cicer arietinum*) which are commonly grow in this area.

## Method:

Fresh leaves of pongamia pinnata were collected from the college campus and dried in shade for one month of powdered the aqueous leaves extract was diluted with water to set 10% 20% 30% concentrations. The leaves of crops were surface sterilized with 0.1% mercuric chloride for 1 minute to remove fungal spores on the seeds of Bengal gram(*Vigna radiata*) Green gram(*Cicer arietinum*) these seeds were washed with distilled water for several times to remove the mercuric chloride.

The seeds of green gram and bengal gram were sown in petri dishes 6x4 cm. the seedling were irrigated with different concentrations aquoes extract of the test plants on everyday. Control plants were irrigated with water. Shoot length, root length, leaf area, yields & root noodles were determined after the 8<sup>th</sup> day. The experiment studies carried out



follows the method of Heisey (1990). The experimental design was randomised complete block with replicates for each treatment & control.

Chemicals that originate from plants or micro organisms impact many organisms in the ecosystem but the term Allelopathy has been most often referred to the activity of these chemicals on other plants or micro organisms. Many of the phytotoxic substances suspected of causing germination and growth inhibition have been identified from plant tissues and soil. A wide array of these compounds are released into the environment in appropriate quantities via root exudation during the decomposition. Most of these are phenolic compounds and are implicated in Allelopathic process which includes the direct or indirect detrimental effect of one plant on the germination growth and development of another plant. Plants produce a large variety of secondary metabolites like phenols, flavonoids, tannins, terpenoids, alkaloids, polyacetylenes, fatty acids and steroids which have an Allelopathic effect on the growth and development of the same plant or neighboring plants. Considerable knowledge has been obtained concerning the chemicals involved in Allelopathy. Several researches have documented the existence of Allelochemicals in big trees and micro organisms. These chemicals are produced in upper or lower parts of the plant or in both to cause Allelopathic effect in wide range of plant communities. Plant parts like Roots, Rhizomes, Stems, Leaves, Flowers/ inflorescence, pollen fruits and seeds are known to contain Allelochemicals. The seed extracts of pongamia pinnata significantly suppressed both the germination and growth of the plant.

One of the most worked out aspects of Allelopathy in manipulated ecosystem and its role in agriculture. In this, the effects of weeds on crops, crops on weeds and crops on crops have been invariably emphasized. In addition to the possibility of using Allelochemicals as bioregulators and natural pesticides promoted sustainable agriculture



in the present work. An attempt has been made to study the Allelopathic effect of pongamia pinnata aqueous and seed extracts on the growth and yield of green gram (*Vigna radiata*) and Bengal gram which is commonly grow in Kurnool district.

### **Present Work :-**

Allelopathic study of Green gram (*vigna radiata*) and Bengal gram (*cicer areietinum*).

Mature fresh seeds of pongamia pinnata were collected from the college campus and dried for two days and made the same into fine powder and used for bioassay, pot experiments and treatment. Using the above mentioned which is made into aqueous extract by the method of Heisey (1990). The aqueous extract was diluted with water to get 10%, 20%, 30% concentrations.

In this activity we used the three petri dishes which contain green gram seeds each dish contains 20 seeds.

In these three petri dishes the aqueous extract of pongamia pinnata is added as 10%, 20% & 30% concentrations and another petri dish is used as control without experimental extract.

After 7 days, we observed the growth in petri dishes. We measured the leaf area, length of the shoot, growth of the green gram, number of roots and mass of the leaf both in control as well as experimental dishes. We observed that the activity of plant present in extract as compared to control, dish the growth is less. Shoot length, Root length, biomass and mortality rate of the seedlings were recorded on the 15<sup>th</sup> day after sowing. The same experiment is tried with Bengal gram. we noticed similar results as in the case of green gram.

### **Pot Experiment Studies**

The seeds of pongamia pinnata were sown in the earthen pots. The seedlings were irrigated with different concentrations of aqueous

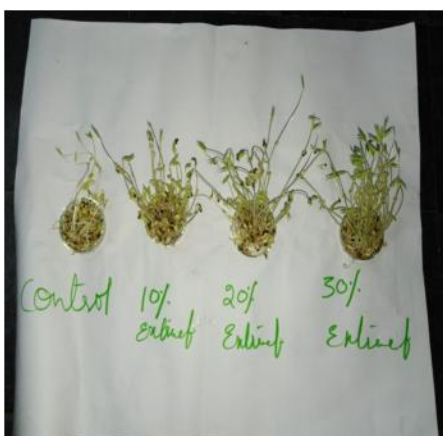
extracts of the test plants on alternate days. Control plants were irrigate with water. Shoot length, root length, leaf area, yields and root nodules were determined at the end of the life span of each crop plant. It is observed that the growth in extracts is much less compared to control



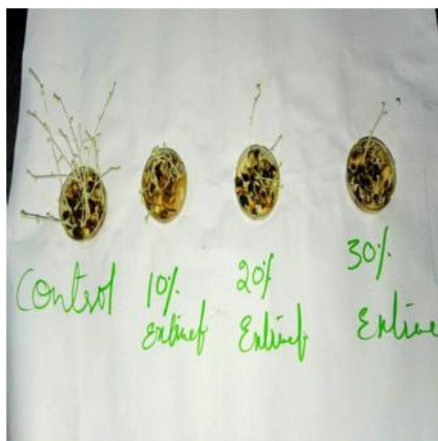
**VIGNA RADIATA**



**VIGNA RADIATA**



**CONTROL**



**CICER**



## ARIETINUM

**TABLE: allelopathic activity of pongamia pinnata leaves  
 extract on greengram and bengalgram**

| ALLELOPATHIC ACTIVITY OF PONGAMIA PINNATA LEAVES EXTRACT ON GREENGRAM |                          |              |             |             |              |          | ALLELOPATHIC ACTIVITY OF PONGAMIA PINNATA LEAVES EXTRACT ON BENALGRAM |                          |              |             |             |              |          |
|-----------------------------------------------------------------------|--------------------------|--------------|-------------|-------------|--------------|----------|-----------------------------------------------------------------------|--------------------------|--------------|-------------|-------------|--------------|----------|
| S.No                                                                  | Different concentrations | No of leaves | No of roots | Root length | Shoot length | Mass     | S.No                                                                  | Different concentrations | No of leaves | No of roots | Root length | Shoot length | Mass     |
| 1                                                                     | Control                  |              | 36          | 9.5 Cm      | 9 Cm         | 0.328 Mg | 1                                                                     | Control                  | 31           | 10          | 4 cm        | 11           | 0.913 Mg |
| 2                                                                     | 10%                      | 2            | 30          | 8.5 Cm      | 8.5          | 0.288 Mg | 2                                                                     | 10%                      | 28           | 8           | 3.5 cm      | 10           | 0.896 Mg |
| 3                                                                     | 20%                      | 2            | 25          | 6.5 Cm      | 7            | 0.210 Mg | 3                                                                     | 20%                      | 24           | 7           | 3.7         | 8            | 0.796 Mg |
| 4                                                                     | 30%                      | 2            | 20          | 5 Cm        | 6.5          | 0.176 Mg | 4                                                                     | 30%                      | 20           | 6           | 3.0         | 7            | 0.755 Mg |



We collected the seeds from college campus then dried and converted into fine powder. Exactly 1kg of Pongamia Pinnata seeds powder taken in a 2 liter flask and added water, and stored it for 15 days. After 15 days it is filtered and concentrated to 50ml by using distillation flask 50ml of Pongamia Pinnata water extract is tested for paper TLC and found four different spots which were deep brown colour in U.V. lamp and is further studied for chromatography analysis for separating compounds. First of all, the extract is taken in column uses JSGW 24/29 effective length no -30 Disc dia.mm-20 column using silica gel.

Water is used as eluate in 30 conical flasks, each flask capacity is 100ml. Each containing roughly 25ml water extract which is separated by column chromatography technique. After one week we observed that in flask number 6, flask number 21, flask number 27, flask number 30, brown colour mass got separated.

Four flasks are as mentioned above are separated for further study for paper chromatography and TLC study. It reveals that these are single compounds. These four compound were identified as

1.Galbone 2.pongone 3.pongalabol 4.pongagallone A & B by  
mixed m.p Co-chromatography or superimposable IR spectra  
with an authentic sample collected from IICT, Hyderabad.

1. Flask no- 6 Galbone
2. Flask no-21 Pongone
3. Flask no -27 pongalabol
4. Flask no-30 pongagallone A & B

Pongamia pinnata leaves also reported several compounds.



## Result & Discussion

Pongamia Pinnata water extract inhibit the growth of both green gram and Bengal gram (*cicer areietinum*). It is due to the presence of Allelochemicals . In the present investigation, the water extract analysis of pongamia pinnata reveal the presence of four organic compounds namely,

1)Pongone, 2)Galbone,3)Pongagallone–A.4)Pongagallone–B.

Shameel– S Usmanghani K, et; al also revealed the presence of above 4 organic compounds. The water extract of pongamia pinnata not only have Allelopathy activity but also have Anti-inflammatory activity.

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## **QUALITY CONSCIOUSNESS : A PARADIGM SHIFT IN HIGHER LEARNING GOVERNMENT INSTITUTIONS IN A.P NETWORKING WITH INDUSTRIES FOR EXCELLENCE IN HIGHER EDUCATION**

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### **Introduction**

In the present circumstances, quality of education at higher levels is more important than mere quantitative expansion. It is often said that quality of Higher education in the country is deteriorating with quantitative expansion. It is said that only about five per cent of the colleges in India are maintaining anything like satisfactory academic standards. The real quality of education acquired by students cannot be determined by subjecting them to a test for a few hours at the end of each year of the course. How their education will be useful for practical life after getting jobs in industries or elsewhere are not tested.

Are we proud of the quality of our college graduates? Are their certificates worth anything? Are they as good as we think are? Are they as good as their counterparts in the rest of the country and the world? Can they excel in an ever increasingly competitive world? The quality of our system is certainly gauged by that of its graduates.

Very few colleges attract the best and the brightest students, by offering excellent facilities for academic and non-academic growth, resources for career development. The reformers in Higher education recommended changes in college education system : re-evaluating the usefulness of the pre-degree programme, the value of a four-year undergraduate study, the need of an orientation programme for new students, the need for quantitative and reasoning skills for students,



flexibility in course choices, diverse majors and minors, and the relevance of technology in the class room.

### **Link with Industry**

The country is perpetuating the system of education left by the British with just a few changes here and there. Most of the graduates and post-graduates who are not only unemployed but also become unemployable. The educated youth who should be job-makers have become job-seekers. What ails the country? What prevents it from becoming a major player in the world? Speedy industrialization with effective employees was essential to overcome the problem of unemployment.

Our graduates flood the job market annually, knocking at every door possible. To prepare them for the job market and to land them at well paying jobs, the system should be flexible enough to offer internship and work-study programmes. Such programmes give students in applied sciences, Law, medicine and the social sciences real-world experience and valuable contact, so it is easier for them to land decent jobs.

Government and aided Institutions are finding it difficult to run the Institutions nowadays due to scarcity of funds. There is a general cry from all these Institutions that funding mechanism has to be completely changed so that they are in a position to partake in the modernization of infrastructure, Participation in R&D work, project work that will be useful to Industry and society, innovative methods in reaching and consultancy work.

Presentations at our colleges and Universities by guest speakers who are experts in different fields from Industry will equip students to deal with job hunting, applications and expertise required on the job. Our students must know why they should major in discipline X, where the opportunities are? And how to find them? Once a close link with corporate India is established, business and Industry may even



underwrite some expenses of useful programmes and events. Students should be encouraged to submit a thesis in their major or a cognate as a culmination of their study experience in lieu of some comparable course work related to any Industry.

In case of engineering education, a National High-power committee suggest engineering institutions a number of measures including laying more stress on design-oriented teaching in the classrooms. All India Council for Technical Education (AICTE) the statutory body also examining some of the salient recommendations of the committee and suggest design-oriented teaching which is useful to the students for learn how to handle the modern tools which make the machines work,

Similarly, the suggestions that students must be exposed to Industrial and Manufacturing processes and that obsolete technology must be replaced by modern practices, eminently admirable as they are, will not easily lend themselves to translation in practice. The main reason for this is that such an exposure cannot be achieved in the absence of a strong Industry-Institution linkage which is again remaining as a sort of seminar topic only with very few institutions forging such a link.

The removal of obsolescence through replacing the old machines such as lathes has indeed been engaging the attention of the AICTE for quite some time but with a limited budget nothing much could be done. Anyway, it is good to learn that the AICTE has already allotted Rs.36 crores for this purpose and for the first time, private Institutions can also apply for assistance under this head. Allocation of hours for both practical and theory classes are also important for acquiring Practical Knowledge from a strong theoretical backing. A good mix of theory and practice is needed but here, as in other areas, the experts rarely agree on the quantum for both segments.



## Industrial Participation

There are many industries in the country which have flourished mainly because of the contribution made by the engineers, technicians and Graduates working there. These technical personnel have been educated and trained by the technical Institution. The industries' management should realize that for the better working of their establishment, they have to help the technical institutions. The various methods by which they can help are as follows.

- Instituting scholarships,
- Sponsoring projects,
- Providing training for the students,
- Involving technical institutions in the R&D programmes,
- Exchange of faculties between industries and institutions,
- Honouring best teachers and students,
- Sponsoring faculties for participating in the continuing education programme,
- Running special courses in the industry.

The technological advancement taking place in the world has forced the industries and institutes to realise that they can no longer live in isolation from one another. They have realized that for their growth and betterment they need the help of the other. This has to be viewed as a good sign but is only a starting point.

Industrial giants in the country can come forward and institute many scholarships for students to pursue their studies and to undertake research work in the field of their requirements. The Government in turn should permit institutions to take these sponsored students over and above the sanctioned strength. The additional infrastructure needed may be provided by the industries or by the organizations. Sponsoring projects has become a reality nowadays. Many industries



are now sponsoring projects as they find it useful for their own growth. The financial burden of the institution is less, and students are able to acquire the real shop-floor experience in the development and execution work of the project in industries.

To provide the much-needed shop floor experience for the students and expose the student to the real problem of industries, industries may come forward in providing industrial training. By these not only the students but also the industries gain. Curriculum for various courses of the institutes had been developed purely by the teachers of these institutes with reference to the foreign institutions. It has been realized now that the industries and other research organizations have to be involved in the curriculum development in view of the changing scenario the industries should participate in the curriculum development work of various institutions.

There are many reputed Industries and Research Organizations contributing immensely in certain fields of specialization. They can come forward in framing proper curriculum for specialized courses; there are many organizations like this in India offering specialized courses in chosen fields of their specialization.

For better industry-institution relation which is the much-needed aspect of technical education, faculties from industries and technical institutions must be freely exchanged for short periods. This will help in sharing the expertise of each other. The best work done by students and the faculty are going unnoticed by society. Only when due recognition is given to the talents, will people come forward for displaying their best. Industries can come forward in instituting awards and cash prizes for the best student and best teachers. This will produce healthy competition among the students and teachers in Higher education.



Advanced courses may be encouraged and university bodies should come forward in encouraging reputed industries and research organization itself. This will go a long way in better utilization of industrial atmosphere and industries expertise for imparting better education to the advanced scholars. There has always been a strong link between the quality of education and industrial productivity. In the years ahead, it can be said: there will be positive and encouraging cooperation between industries and institutions.

### **Role of Training and Placement**

To contact various industries and arrange industrial training for students during Winter/Summer vacations. The HODs interact with various departments and assist the faculty members for monitoring the students while on training in association with industrial counterparts. To identify the industrial problems the UG/PG students take up related projects/thesis work and obtain necessary permission from the respective organization in this regard.

In the context of liberalized economy and Global competition, the industries are no more in a protected atmosphere and are required to face open international competition. Training and placement is one of the very important activities for any institution which can play a key role in developing the industry-institute interaction. This will help to make the students more acceptable and adaptable to the new expectations of the industry.

To achieve the interaction, following are some of the responsibilities of T&P department.

- To visit the Industries more frequently
- To identify and analyze the current needs of the Industries,
- To arrange training of the teaching/non teaching staff in different industries,



- To help in collaborating with industry in restructuring curricula from time to time keeping with the changing technologies,
- To arrange short term refresher courses to personnel working in industry,
- To arrange faculty/students industrial tours, which will increase the knowledge on current issues and trends.

## Conclusion

By networking with industries, the centre's enhances the quality of education at higher level. The evaluation may be a starting point for long-term development of teaching and learning processes, networking and collaboration. The main purpose of the education is to provide students with knowledge and expertise to prepare them for a career in business and industry. The Ministry of education designates the centres of excellence on the basis of evaluations made by the evaluation panel. Networking within and outside the institution is one of the important operation of the evaluation targets for the centre's excellence. The networking with industries helps the degree programme in education, research and development. It helps students to find exchange places abroad and employment in the region. The AICTE/UGC monitors all institutions for establishment of training and placement departments in the institutions. The selection of T&P officer must be given due attention because he/she would be the key person to enhance the industry linkages.

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## **WOMEN AND WOMEN WRITERS IN INDIA IN THE PERSPECTIVE OF WOMEN EMPOWERMENT**

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### **Abstract**

Human life has been in the ignorance with the three major aspects by which man and woman are struggling: Gender, Class and Race. Here, the emphasized component is about gender discrimination which is making woman psychologically deprived about her status in the world comparing with man. The irony can we think of the relation between man and woman is inevitable but the genders are not wise enough to understand their prime roles and humility they have to maintain as per the situation. My paper is going to ensure that neither of them should bother about their height in the social status knowing their functions rather than rights. As woman was degraded in the past in some fields, the thought should be vanished to have mutual relation as it is unavoidable.

### **1.1Introduction:**

The problem of the status of women involves equality between men and women. The women, throughout the world have been considered the second sex — the inferior sex. Equality and status are closely associated with power. Changing status involves the sharing of power on equal footing with men in decision making and its implementation at informal and formal levels. The societal value framework plays a vital role in determining the changing status of power equations, and, hence, the status of women involves the distribution and redistribution of power. Further half of the world's population is female and two thirds of the working force consists of women. In India, the situation is broadly the same. Shashi Deshpande



is regarded both as a contemporary novelist and a writer dealing with women's problems in her works. This study is focused on the women characters in Shashi Deshpande's novels. Hence, references are made in this paper to the world situation and the Indian situation regarding women. The paper focuses on the women characters in Shashi Deshpande's novels namely — Saru, Indu, Jaya, Urmila, Sumi and Madhu. Also, an attempt was done to distinguish between two kinds of language: father language and mother language. A woman is not accepted on her terms by the patriarchal structure anywhere. If she wants to be accepted anywhere, she has to know the rules of the game that we have to play, then she has to use what is called 'The Father Language.' The Father Language is the language that is expository pertaining particularly to scientific discourse and involves talking down to and does not seek any particular response.. It is the Gyno critics that have considered the divide between the father language and the mother language. During the last two or three decades the term 'Woman Studies' has become popular. It deals with studies dealing with women. In the Indian situation if we go back to Vedic period we find that the status of a woman was equal to that of a man. After the Vedic period, a flat position for women in society was presented. After independence, we notice a certain improvement in the status of women. Today, we are critically analyzing the position of women. Questions are being raised regarding a woman's position in every walk of life. Actions are being proposed to change and improve the situations and solve the problems that are being faced by women.

## **1.2. Feminist Approach:**

To understand women characters in Shashi Deshpande's novels we will first see what the feminist approach consists in. According to Neera Dessai the four feminist perspectives regarding women are: (1) Liberal Feminism, (2) Radical Feminism, (3) Socialistic Feminism, and (4) Eco-Feminism.



### **1.3. Situation in India:**

In India, we have a situation in which there is a rapid growth of population and mass unemployment of varying degrees. Coupled with this general economic problem there are demands for dowry, violence against women and a general devaluation of a woman through various forms of exploitation. Brides are burnt for non-fulfillment of dowry, and female feticide is on the increase to satisfy the preference for a son. Hence, women are underdeveloped in India. Problems like the deterioration of their social status, and the perpetual insecurity in a squatter settlement are important considerations in determining the social status of women in India. In the patriarchal Indian social structure one observes five expressions: (1) Women workers are treated unequally, (2) There is less endowment for women, (3) Women are subordinated through violence, (4) Media's negative portrayal of women, and (5) The support systems for women sometimes prove to be traps for women. Women do stereotyped jobs such as school teachers, typists, clerks, telephone operators, midwives and ayahs. While married women have a low social status and security, unmarried women are vulnerable at the place of work, and have to take extra care to ward off advances by men. Sometimes in the absence of sons, some daughters stay unmarried to support their old parents.

### **1.4. Status of Women:**

According to Feminists the improvement of the status of women requires a change in the attitudes and roles of both men and women. Women's development and empowerment should not only be viewed as an issue in social development but should be seen as an essential component in every dimension of development. Equity, sovereign equality, interdependence, common interest and co-operation among all states should be the basis for the improvement of the status of women.



### **1.5. Women in India:**

There were distinct stages of rise and fall in the status of women in the Indian context. It is stated that in the Vedic period women participated in all the fields like men and took active part in every sphere of human life. Woman was man's friend, his co-worker and never his inferior, she had enjoyed the property rights and had access to the property of her father and husband, struggled against the political as well as social problems freely with man. Women went to the Gurukula to receive education and married only after getting education. During the Vedic period, women occupied a high position in society and used to move about freely in society. It is stated that women had equal rights with men in selecting the life partner in marriage. Marriage was well established in the Vedic period, as a social and religious institution and a necessity. It prevented sexual immorality to a great extent. In the middle ages, women's social status deteriorated considerably. The son came to be considered more important in the family compared to the daughter because religiously and economically the former was thought more useful.

### **1.6. The Social Structure India:**

The Indian social structure, its strength and stability is clearly and unequivocally vested in the family. For women, the greatest accomplishment is motherhood. Everything prior to marriage is preparation; everything after motherhood is reward for fulfilling her destined role. Whether Jain, Buddhist or Hindu, Dharma is a conspicuous plinth on which the entire structure of society is built. You destroy it, therefore, at your own risk — Dharma has been described as a very pregnant word: it has meanings at several different levels, though the overall impact of the word gives Hindus the injunction to follow a religion-oriented way of life. This underlying body of ethical behavior, related to the continuity of the universe as a recognized



scientific reality, applied to married life, gives woman as the saharini or worldly protector of her husband's life and the one who holds things together, a meaning that is very different than the rights of women demanded as human justice in many parts of the world. There are various reports which throw light on the position of Women's education during the last two hundred years. Neera Desai has presented a very useful picture of this. The position of female education during the 19 th century was very bad. "It was an age when the mass of people were steeped in complete illiteracy. Education was restricted even among boys only to a smaller section. Education among girls was still more meager." Gandhiji's philosophy was that a woman has a right to education. Education, according to him, develops and sharpens one's intellect and it increases one's capacity for doing well. Though men and women are regarded as equals, in actual practice when it comes to the question of giving education to the girls, there is a tendency among the parents to prefer a boy's education to that of a girl's. The illiterate mother in particular has very little chances to realize that she should guarantee better education to her daughter at least. The National Committee on the Status of Women observes that the Constitutional directive to provide free and compulsory education for all children up to 14 years has remained unfulfilled till now.

### **1.7. Women Writers in India:**

Education has brought in an important change in the social status of women and has offered them job opportunities in new fields. From time immemorial, Indian women, have been showing their worth in each and every discipline of knowledge. Gargi and Ansuya in scriptures, Sita and Rani Durgavati, Rajia Begum and Noorjahan in history and Ruth Parawer Jhabvala and Arundhati Roy, Manju This 'Great Event' in the very onset of the creation contains the germ of disparity between man and woman. Man boasts and brags, domineers and dominates over women only because woman has come out from



man, she being one of the ribs of man. In Hindu religion, the social stature of women is not certain, sometimes upgraded and sometimes degraded. In modern time, women have shown their mettle in every field. If we dive deep into the history of Indian authors in English, we come to the conclusion that Indian women have shown their worth both qualitatively and quantitatively and are displaying their worth even today without any full stop. The history of Indian women novelists in English begins with Toru Dutt who died at the early age of 21 at a younger age than John Keats of the Romantic School of poetry. Both her novels- Bianca and Le Journal de Mademoiselle d'Arvers deal with the autobiographical projections of the novelist- the experience, sweet and sour, she gathered in her very short life. The agony and catharsis arising out of sisterly love and bereavement in these two novels are very beautifully projected. Though the characters are Spanish and French, yet the delineation is entirely Indian, full of love and affection, sincerity and purity, which characterize the core of an ideal Indian woman.

The autobiographical note of the novels reminds us of John Keats's later poetry, which is richly influenced by the poet's carking cares and corroding anxieties he faced due to his failure in love and the ultimate death of his brother. Cornelia Sorabji, Kamala Markandaya, Ruth Praver Jhabvala, Santha Rama Rau, Nayantara Sahgal, Shashi Deshpande, Anita Desai, Geeta Mehta, Rama Mehta, Arundhati Roy, Shobha De, Bharati Mukherjee, Mahasweta Devi, Manju Kapoor are some famous women writers, but many other women novelists have left their indelible imprint on the readers of Indian fiction in English. Cornelia Sorabji, a Parsi Christian, is a great figure in the realm of novels. She is mainly famous for her three important works- Love and Life Behind the Purdah (1901), Sun-Babies in the Child Life of India (1904) and Between the Twilight (1908). She reveals in her novels the various moods and vestures going in under the `purdah'- the ecstasy,



tragedy, comedy and many more things which are unnoticed even by a feminist philosopher. She seems to satirize the hypocrisy and domineering in a male dominated societal framework. To her, women are no longer an object of pleasure but a reservoir of all the healthy values of life. Her realistic and miserable picture of the Indian women is really superb and it reminds us of what Plato, the classicist, holds: We shall have to train the women also, then in both kinds of skill, and train them for war as well and treat them in the same way as the men. In short, 'Purdah,' which plays a very important role in an average Indian woman's life in both Muslim and Hindu communities, though more conservatively observed in the Muslim than in the Hindu community, is the core of Sorabji novels.

Kamala Markandaya after the Second World War the Indian women novelists seem to have taken a different route, a new vision. In this period, Kamala Markandaya and Ruth Praver Jhabvala are unquestionably the most outstanding personalities in the field of social and artistic novels. Kamala Markandaya's first novel, *Nectar in a Sieve* made her a lovable writer of great fiction in both theme and technique, matter and manner. So far as the vision and vesture of this novel is concerned, she is very close to Pearl S. Buck's *The Good Earth* and K.S. Venkata Ramani's *Murugan the Tiller*. The novel deals with a realistic picture of the Indian villagers, their customs and cultures, rites and traditions. The villagers or the down trodden have to work day and night in their field to earn their living. Kamala Markandaya's *Nowhere Man* depicts the East-West encounter suffused with racial discrimination. The stoical attitude of Srinivas, his death while saving Fred who wanted to destroy him: the racial madness and the existential dilemma have been well stated in the novel. The harmony and the tolerance — the only solutions to the ills of racial tensions have been analytically and objectively dealt within the work. Kamala Markandaya's tragic vision of the world gets expressed in the novel.



Kamala Markandaya's other novel which earned popularity all over India and abroad is *Some Inner Fury*. It shows the protagonist Mira's recollection of the past, her emotions, passions and ecstasies.

K.R.Srinivasa Iyengar holds the view: *Some Inner Fury* is a tragedy engineered by politics, even as *Nectar in a Sieve* is a tragedy engineered by economics; and in both novels the chief characters transcend the bludgeonings of economic or political mischance and assert the unconquerable spirit of humanity. *A Silence of Desire*, the third novel by Kamala Markandaya, has neither to do with economics as in *Nectar in a Sieve* nor to do with politics as in *Some Inner Fury*, it unfolds the layers of spiritual reality and mystic vision of India. It is the story of Dandekar, a government servant, who gets tortures and sufferance because of his wife, Sarojini whose attitude is just opposite of her husband. She is suffering from a tumour and so she goes to seek a spiritual solace from the "Swamy." Dandekar doubts the 'faith-cure' belief of a Swami. Thus, through these two characters- the husband and the wife, Kamala Markandaya the novelist, presents an age-long confrontation between mind and soul, between intellect and emotion, between science and poetry.

*The coffer Dams* (1969) by Kamala Markandaya is a fine blending of art and truth, feeling and form. It shows a new style entirely original suffused with 'oblique and convoluted expression.' It is the story of the British engineers who construct a riverdam in independent India. It portrays a very fine picture of the Indo-British encounter resulting in despair and disappointments. *The Nowhere Man* deals with the theme of the anti-immigrant wave of the sixties, which engulfs the life of Srinivas, an old Indian widower and a Londoner, who is persecuted mercilessly by a number of fanatics. In this novel the image of disease is very suggestive. The disease 'leprosy' suggests the protagonist's sense of isolation and disintegration. The other novels which Markandaya has to her-credit are *A Handful of Rice*; *Two*



Virgins; The Golden Honeycomb; Possession. Kamala Markandaya is undoubtedly an important woman novelist in recent times. Ruth Praver Jhabvala Ruth Praver Jhabvala, the contemporary of Kamala Markandaya has also left a mark in the history of women novelists in English. The Nature of Passion deals with a modern young girl, Nimmi, who wants to discard the age-old customs and rites, myths and tradition. She fights for the cause of woman's emancipation. She attends club regularly, plays tennis, keeps bob-cut hair, and attends lectures on English Romantic Poets. But on the other hand, her community is dead against all her western activities. Through Nimmi, the novelist, wants to satirize these silly youngsters who have false pretensions to modernism and independence.

Anita Desai Anita Desai (1937) is satisfied to dive deep into the inner working of the protagonists and brings into the hidden depths of human psyche. Her fictional world is just like an iceberg hidden and partly visible; it is overcast by mist and fog, half revealed and half concealed. Her inner voyage of characters in the novels is greatly influenced by Virginia Woolf. Anita Desai deals with the mind and the soul of a character, his inner workings and hidden and silent thoughts rather than his outer appearances. Her main business as a fiction writer is to expose the truth. In this sense she is very near to great writers like Dostoevsky, Proust, Virginia Woolf, James Joyce and Henry James. Cry, the Peacock is a tragic story of Maya who is haunted by the astrological prediction of the death of either wife or husband. In other words, she is the victim of fate and providence, that is, an uncannily oppressive sense of fatality. To crown the effect, she has no children and thus this leads to Maya's isolation. She is so much segregated by society and astrological dilemma that in a fit of insane fury, she kills her own husband. In The Voices in the City the scene shifts from Delhi to Calcutta. Here the Maya- Gautam duo is re-enacted in the form of Monisha -Jiban marriage. Monisha has to undergo



unbearable tyranny and injustice, insult and abuse in her husband's dwelling. In the long run, she commits suicide. Shobha De Shobha De is a modern novelist who is famous for portraying the sexual mania of the commercial world. In narration of incident she is very frank and straight forward. Like Anita Desai, she has the gift of exploring the subdued depths of women psychology. In 1988, she shot into literary limelight with her first novel, *Socialite Evening*, which is Lawerencian in expression. Her other works are *Starry Nights*, *Sisters*, *Sultry Days*, *Strange Obsession*, *Snapshots*, *Second Thoughts*, *Shooting from the Hips*, *Small Betrayals*, *Surviving Men* and *Speed Post*. She believes that a man's personality can be judged in a true perspective only when one goes into his interior more than his exterior behaviour. It is to be noted that Shobha De, like D.H. Lawrence, has openly discussed sex in most of her works. But they are not easily termed as pornographic works. Her books have some fine portraits and symbols, words and phrases which make it attractive to the connoisseur of art. In art, it is not the matter that matters but manner that matters. Moreover, Freud, a great psychologist, has expounded a highly revolutionary theory of sex. So, now sex is not a taboo but part and parcel of life. In the past few years the social context has been changing rapidly and there is an obvious correspondence between the characters in the novels and the changing social context. The social distinguish are reflected clearly in creative writing. A writer writes in a social context and a certain tradition. This brief survey of Indian women novelists in English transparently shows that women have made their permanent mark in the field of English fictions. They are conferred not only national but international awards also. In most of their views they have tried their best to free the female mentality from the age-long control of male domination. Today whatever political, social, cultural and individual awareness we see in women, is partly a result of these fiction writers who heralded a new consciousness in the realm of traditional thinking for the enrichment of



women in the all social areas of the world which becomes the symbol of love and peace.

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## **HAUDCTP<sup>2</sup>: HIGH AVERAGE UTILITY DISCOUNT CATEGORY WEIGHT BASED TIME PERIOD PATTERNS**

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### **Abstract**

Frequent pattern mining is a most important technique used to mine patterns in a transactional database. The limitation in frequent pattern mining is that, the purchase quantities of items are not taken and they won't measure utility of weight, it leads to miss the rare patterns that generate high profit and sometimes it takes the patterns that are not interesting. High average utility pattern mining (HAUPM) will overcome the loopholes of frequent pattern mining and solve the drawbacks of HUPM. Some limitations were observed in the existing mining algorithms that they don't measure time period of purchase transactions, discount of items and category weight of items. To overcome these limitations in this paper we propose High average utility discount category weight-based time period pattern mining (HAUDCTP<sup>2</sup>) where it discovers High average utility discount category weight-based time period patterns. The major focus of this HAUDCTP<sup>2</sup> is to mine



patterns efficiently using above properties and reduce unwanted patterns using pruning strategies.

**Keywords:** High average utility item set, periodic item set, discount-based periodicity, category weight based periodicity.

## 1. Introduction

High average utility item set mining (HAUIM) is one of the most important data mining tasks. It has enticed contemplation to a greater extent in the recent years. The traditional problem of Frequent Item set Mining (FIM) is being addressed and extension for the same is implemented. This consists of discovering frequent item sets i.e. groups of item sets appearing frequently in a transaction database. FIM clampdown assuming that each item can appear only once in every transaction and all items has the equal importance (e.g. weight, unit profit or value). High-Utility Item set Mining (HUIM) addresses the issue by assuming each item may have non-binary purchase quantities and that each item has a weight in the transactions. The goal of HUIM is to find all the item sets that are yielding a high profit in the transactional database. Besides, market basket analysis, HUIM has several other applications such as website click stream analysis, and biomedical applications. Mining high-utility item sets are widely recognized as more challenging than FIM because the utility measure used in HUIM is not anti-monotonic, i.e. a high utility item set may have supersets or subsets having lower, equal or higher utilities. Thus, techniques for reducing the search space in FIM cannot be directly reused in HUIM.



Though several algorithms exist for HUIM, an inherent limitation of these algorithms is that they are inappropriate to identify the repeating customer purchase behaviour which is common in real-life scenarios. For example, in a market place, some consumers may buy a set of products regularly (approximately daily or weekly basis). Identifying these purchase patterns helps to better understand the behaviour of consumers and their marketing strategies. For example by ordering specific promotions to cross-promote products such as reward or points to customers who are buying a set of products periodically. In FIM, algorithms have been proposed to discover periodic frequent patterns (PFP) in a transactional database. However, these algorithms are lacking behind to find periodic patterns that yield high profit, as patterns are selected based on their frequency. Thus, these algorithms may find huge number of periodic patterns that generate low profit and miss many rare periodic patterns that yield a high profit. HUIM may not consider length of each item set while finding item sets in transactional database and while finding item sets' profit without considering the discount notion, these may lead to unpromising results.

Addressing the limitations, this paper proposes the task of high average utility discount category weight-based time period pattern mining (HAUDCTP). The goal of HAUDCTP is to discover efficiently all groups of items that were purchased periodically and to generate high profit considering the discount and category weight, in a consumer transactional database. The contribution of



this paper is fourfold. First, both the concepts of periodic patterns used in HUIs and HAUIs are combined to generate a new type of pattern named periodic high average utility item sets (PAHIs), and its properties are studied. Second, novel measures of average periodicity and minimum periodicity are introduced to provide a flexible way of assessing the periodicity of patterns. Third, an efficient algorithm named HAUDCTP<sup>2</sup>M (High Average Utility Discount Category Weight-Based Time Period Pattern Miner) is proposed to efficiently discover the periodic high average utility item sets. Fourth, an extensive experimental evaluation is carried to compare the efficiency of HAUDCTP<sup>2</sup>M with the state-of-the-art of FHM and HUI algorithms for HAUIM. Experimental results show that the HAUDCTP<sup>2</sup> algorithm is efficient, and can filter a huge amount of non-periodic patterns to reveal only the desired item sets.

The rest of this paper is organized as follows. Section 2, 3, 4, 5 and 6 respectively present preliminaries related to HAUIM, related work, the HAUDCTP<sup>2</sup> algorithm, the experimental evaluation and the conclusion.

## 2. Related work

This section reviews related work in high average utility item set mining and periodic high utility pattern mining.

### 2.1 High average utility item set mining

**Definition 1: (Transactional Database).** Let  $I$  be a set of items (symbols). A transactional database is a set of transactions  $D = \{T_1, T_2, \dots, T_n\}$  such that for each transaction  $T_c$ ,  $T_c \in I$  and  $T_c$  has a unique identifier called its  $T_{id}$ . Each



item  $i \in I$  is associated with a positive number  $p(i)$ , called its external utility. For each transaction  $T_c$  such that  $i \in T_c$ , a positive number  $q(i, T_c)$  is called the internal utility of  $i$ .

**Example 1:** Consider the database of Table-1, which will be used as running example. This database contains five transactions ( $T_1, T_2, \dots, T_5$ ). Transaction  $T_3$  indicates that items  $a, b, c, d$  and  $e$  appear in this transaction with an internal utility of respectively 3, 4, 7 and 2. Table-2 indicates that the external utility of these items are respectively 5, 7, 2 and 6 with discounts 2%, 1%, 2%, and 5% and Category Weights are 1, 1, 3, 4.

Table-1: A transaction database

| TD | Transaction                    |
|----|--------------------------------|
| T1 | (a, 7), (b, 2), (c, 1), (d, 4) |
| T2 | (a, 5), (c, 3)                 |
| T3 | (a, 3), (b, 4), (c, 7), (e, 2) |
| T4 | (a, 1), (d, 6)                 |
| T5 | (a, 9), (b, 6), (e, 5)         |

Table-2: External utility values and discounts

| Item            | a  | b  | c  | d   | e  |
|-----------------|----|----|----|-----|----|
| Unit profit     | 5  | 7  | 2  | 3   | 6  |
| Discounts       | 2% | 1% | 2% | 10% | 5% |
| Category Weight | 1  | 1  | 2  | 3   | 4  |

**Definition 2: (Item Utility):** The utility of an item  $i_j$  in a transaction  $T_q$  is denoted as

$$u(i_j, T_q), \text{ and defined as: } u(i_j, T_q) = q(i_j, T_q) \times (p(i_j) - d(i_j)) + c(i_j)$$

Assume as equation (1)



where  $q(i_j, T_q)$  is the purchase quantity of  $(i_j)$  in the transaction  $T_q$  and  $p(i_j)$  represents the profit value of  $(i_j)$ ,  $d(i_j)$  represents the discount value of  $(i_j)$  and  $c(i_j)$  represents the category weight value of  $(i_j)$ .

For example in Table-1, the utility of (a) in transaction  $T_1$  is calculated as  $u(a) = 7 \times (5 - (2\%)5) + 1 = 35.3$ .

**Definition 3: (Itemset Utility in a Transaction):** The utility of an itemset  $X$  in a transaction  $T_q$  is denoted as  $u(X, T_q)$ , and defined as:

$$u(X, T_q) = \sum_{i_j \in X \wedge X \subseteq T_q} u(i_j, T_q)$$

Assume as equation (2)

For example in Table-1, the utility of the itemset (abcd) is calculated as  $u(abcd, T_1) = (7 \times (5 - (2\%)5) + 1) + (2 \times (7 - (1\%)7) + 1) + (1 \times (2 - (2\%)2) + 2) + (4 \times (3 - (10\%)3) + 4) = 68.92$ .

**Definition 4: (Itemset Utility in D):** The utility of an itemset  $X$  in a database  $D$  is denoted as  $u(X)$ , and defined as:

$$u(X) = \sum_{X \subseteq T_q \wedge T_q \in D} u(X, T_q)$$

Assume as equation (3)

For example in Table-1, the utility of the itemset (ab) is calculated as  $u(ab) = u(ab, T_1) + u(ab, T_3) + u(ab, T_5) = 50.16 + 44.62 + 87.68 = 182.46$ .



**Definition 5: (Transaction Utility):** The transaction utility of a transaction  $T_q$  is denoted as  $tu(T_q)$ , and defined as:

$$tu(T_q) = \sum_{i_j \in X} u(i_j, T_q)$$

Assume as equation (4).

For example, in Table-1, the utility of  $T_1$  is calculated as  $tu(T_1) = 35.3 + 14.86 + 3.96 + 13.8 = 67.92$ .

**Definition 6: (Total Utility in D):** The total utility of all transactions in a database  $D$  is denoted as  $TU$ , and defined as:

$$TU = \sum_{T_q \in D} tu(T_q)$$

Assume as equation (5)

For example in Table-1, the total utility of the database is calculated as  $TU = tu(T_1) + tu(T_2) + tu(T_3) + tu(T_4) + tu(T_5) = 67.92 + 33.38 + 75.74 + 25.1 + 120.18 = 322.32$ .

The above definitions are used in traditional HUIM. An itemset  $X$  is said to be a high-utility itemset (HUI) iff its utility in a database  $D$  is no less than a user-specified minimum high-utility count (minimum high-utility threshold multiplied by the total utility of the database), that is:

$$HUI \leftarrow \{X | u(X) \geq TU \times \delta\},$$

Assume as equation (6)



where  $\delta$  is the minimum high utility threshold.

In this example, assume that the minimum high-utility threshold is set to 20%. Hence, the minimum high utility count is calculated as  $322.32 \times 12\% = 38.67$ . The HUIs in the running example are thus:  $\{(a:122.9), (b:83.16), (ab:88.23), (e:39.9), (ab:88.23), (ac:47.63), (ae:49.45), (be:54.6), (abe:56.06)\}$ .

From the above example, it is clear that the utilities of item sets tend to be larger for item sets containing more items. The problem of high average-utility item set mining(HAUIM) was thus proposed using a novel measure called average-utility, to provide a fairer measurement of the utilities of item sets that takes their lengths into account. HAUIM is defined by the following definitions.

**Definition 7: (Average-Utility of an Item in a Transaction):** The average-utility of an item ( $i_j$ ) in a transaction  $T_q$  is denoted as  $au(i_j)$ , and defined as:

$$au(i_j, T_q) = q(i_j, T_q) \times (p(i_j) - d(i_j)) + c(i_j) / 1 = (u(i_j, T_q)) / 1$$

Assume as equation (7)

For example in Table-1, the average-utility of the item (a) in transaction  $T_1$  is calculated as  $au(a, T_1) = 35.3 / 1 = 35.3$ , which is equal to its utility in traditional HUIM.

**Definition 8: (Average-Utility of an Item set in a Transaction):** The average-utility of a k-itemset  $X$  in a transaction  $T_q$  is denoted as  $au(X, T_q)$ , and defined as:

$$au(X, T_q) = \frac{\sum_{i_j \in X \wedge X \subseteq T_q} u(i_j, T_q)}{|X| = K}$$



Assume as equation (8)

For example in Table-1, the average-utility of the itemset (ab) in transaction  $T_1$  is calculated as  $au(ab, T_1) = (35.3 + 14.86) / 2 = 25.08$ .

**Definition 9: (Average-Utility of an Item set in D):** The average-utility of an item set  $X$  in a database  $D$  is denoted as  $au(X)$ , and defined as:

$$au(X) = \sum_{X \subseteq T_q \wedge T_q \in D} u(X, T_q)$$

Assume as equation (9)

For example in Table-1, the average-utility of the item set (ab) is calculated as:  $au(ab) = 25.08 + 22.31 + 43.84 = 91.23$ .

From the above example, it is clear that the utilities of item sets tend to be larger for item sets containing more items. To address the aforementioned limitation of HAUIM, this section introduces the concept of high average utility discount periodic category weight-based patterns (HAUDCTP<sup>2</sup>). The problem of high average utility discount category weight-based time period item set mining (HAUDCTPIM) was thus proposed using a novel measure called periodic-utility patterns, HAUDCTPIM is defined by the following definitions.

**Definition 10: (Average periodicity of an item set).** The average periodicity of an item set  $X$  is defined as

$$avgper(X) = \sum g \in \frac{ps(X)}{|ps(X)|}$$

. Assume as equation (10)



For Example the periods of item sets  $\{a,c\}$  and  $\{e\}$  are respectively  $ps(\{a,c\}) = \{1,2,2,1,1\}$  and  $ps(\{e\}) = \{2,1,1,2,1,0\}$ . The average periodicities of these item sets are respectively  $avgper(\{a,c\}) = 1.4$  and  $avgper(\{e\}) = 1.16$ .

The average periodicity is a useful measure which measures what the typical period length of an item set is. It cannot be used as the only prime measure for evaluating the periodicity of a pattern as it doesn't consider whether an item set contains periods that vary widely or not. For example, the item set  $\{a, d\}$  has an average periodicity of 1.5. However, this is misleading since this item set only appears in transaction  $T_1$  and  $T_4$ , and its periods  $ps(\{T_1, T_4\}) = \{2,4,3\}$  vary widely. Intuitively, this pattern should not be a periodic pattern. To prevent the occurrence of patterns having periods that vary widely, our algorithm combines the average periodicity measure with the other periodicity measures. These measures are combined with the average periodicity to retrieve the result.

First, the minimum periodicity value of an itemset is defined as  $minper(X) = \min(ps(X))$  in order to evade retrieving item sets having some very short periods. This measure is not reliable because the first and last period of an item set are binary i.e. equal to 1 or 0 respectively, if the item set appears in the first or the last transaction of the database. For example, the last period of item set  $\{e\}$  is 0, because it appears in the last transaction ( $T_5$ ), and thus its minimum periodicity is 0. Our proposal to this exude is to eliminate the first and last periods of the item set from the calculation of the minimum periodicity. If the set of periods is empty as a result of this elimination, the minimum periodicity is defined as  $\infty$ .



Second, we consider the maximum periodicity of an item set  $\text{maxper}(X)$  as defined previously. The hypothesis for using this measure in combination with the average periodicity is that it can circumvent discovering periodical patterns that do not occur for long periods of time.

**Definition 11: (Periodic High-Average Utility Category Weight-Based Item sets).** Let  $\text{minutil}$ ,  $\text{minAvg}$ ,  $\text{maxAvg}$ ,  $\text{minPer}$  and  $\text{maxPer}$  be positive numbers, provided by the user. An itemset  $X$  is a periodic high-utility item set if and only if  $\text{minAvg} \leq \text{avgper}(X) \leq \text{maxAvg}$ ,  $\text{minper}(X) \geq \text{minPer}$ ,  $\text{maxper}(X) \leq \text{maxPer}$ , and  $u(X) \geq \text{minutil}$ .

For example, if  $\text{minutil} = 20$ ,  $\text{minPer} = 1$ ,  $\text{maxPer} = 3$ ,  $\text{minAvg} = 1$ , and  $\text{maxAvg} = 2$ , the complete set of PHAUDCIs is shown in Table-3.

Table-3: The set of PHAUDCIs in the running example

| Itemset | $u(X)$ | $g(X)$ | $\text{minper}(X)$ | $\text{maxper}(X)$ | $\text{avgper}(X)$ |
|---------|--------|--------|--------------------|--------------------|--------------------|
| {a}     | 123.9  | 5      | 1                  | 1                  | 1                  |
| {b}     | 84.16  | 3      | 1                  | 2                  | 1.5                |
| {e}     | 43.9   | 2      | 1                  | 2                  | 1.5                |
| {ab}    | 90.23  | 3      | 1                  | 2                  | 1.5                |
| {ac}    | 50.63  | 2      | 1                  | 3                  | 2                  |
| {ad}    | 38.1   | 2      | 1                  | 3                  | 2                  |
| {ae}    | 54.45  | 2      | 1                  | 2                  | 1.5                |
| {be}    | 59.6   | 2      | 1                  | 2                  | 1.5                |
| {abc}   | 39.8   | 2      | 1                  | 2                  | 1.5                |
| {abe}   | 62.06  | 2      | 1                  | 2                  | 1.5                |



Developing an efficient algorithm for mining PHAUDCIs requires development of efficient pruning strategies.

### 3 The algorithm

The proposed PHAUDCM algorithm is, an average utility-list discount category weight-based algorithm, inspired by the PHM algorithm, where the utility-list of each itemset  $X$  is annotated with two additional values:  $\text{minper}(X)$  and  $\text{maxper}(X)$ .

The main procedure of PHAUDCM takes a transactional database as input, and the  $\text{minutil}$ ,  $\text{minAvg}$ ,  $\text{maxAvg}$ ,  $\text{minPer}$  and  $\text{maxPer}$  thresholds. The algorithm first scans the database to calculate  $\text{TWU}(\{i\})$ ,  $\text{minper}(\{i\})$ ,  $\text{maxper}(\{i\})$ , and  $|g(\{i\})|$  for each item  $i \in I$ . Then, the algorithm calculates the value  $\gamma = \frac{|D|}{\text{maxAvg}} - 1$  to be later used for pruning item sets.

Then, the algorithm identifies the set  $I^*$  of all items having a  $\text{TWU}$  no less than  $\text{minutil}$ , a maximum periodicity no greater than  $\text{maxPer}$ , and appearing in no less than  $\gamma$  transactions. The  $\text{TWU}$  values of items are then used to establish a total order  $\prec$  on items, which is the order of ascending  $\text{TWU}$  values.

A database scan is then performed. During this database scan, items in transactions are reordered according to the total order  $\prec$ , the average utility-list of each item  $i \in I^*$  is built and a structure named EUCS (Estimated Utility Co-Occurrence Structure) is built.



The EUCS can be implemented as a triangular or as a hashmap of hashmaps where only tuples of the form (a, b, c) such that  $c \neq 0$  are kept. After the construction of the EUCS, the depth-first search exploration of item sets starts by calling the recursive procedure Search with the empty item set  $\emptyset$ , the set of single items  $I^*$ ,  $\gamma$ , minutil, minAvg, minPer, maxPer, the EUCS structure, and  $|D|$ .

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**Algorithm-1:** The HAUDCTP<sup>2</sup> Algorithm

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**Input:** A transactional database and the threshold values minutil, minAvg, maxAvg, minPer and maxPer

**Output:** The set of periodic high-utility itemsets

1. Minper( $\{i\}$ ), maxper( $\{i\}$ )  $\leftarrow$  HAUDCTP<sup>2</sup>(D)
  2.  $|g(\{i\})| \leftarrow$  HAUDCTP<sup>2</sup>(D)
  3.  $\gamma \leftarrow \left( \frac{|D|}{\maxAvg} \right) - 1$
  4.  $I^* \leftarrow \vartheta \wedge |g(\{i\})| \geq \gamma \wedge \omega$
  5.  $\theta \leftarrow$  list of ascending values of  $I^*$
  6.  $\varkappa \leftarrow$  HAUDCTP<sup>2</sup>(D)
  7. Search( $\emptyset$ ,  $I^*$ ,  $\varkappa$ , minUtil, minAvg, minPer)
- 

The notations followed are  $\vartheta$  – all elements  $i$  such that  $TWU(i) \geq \minutil$ ,  $\omega$  –  $\maxper(\{i\}) \leq \maxper$ ,  $\varkappa$  – average utility list of item set built on EUCS structure. The Search procedure takes the input as an item set  $P$ , extensions of  $P$  having the form  $P_z$  meaning that  $P_z$  was previously obtained by appending an item  $z$  to  $P$ ,  $\gamma$ , minutil, minAvg, minPer, maxPer, the EUCS, and  $|D|$ . The search procedure



performs a loop on each extension  $P_x$  of  $P$ . In this loop, the average periodicity of  $P_x$  is obtained by dividing  $|D|$  by the number of elements in the utility list of  $P_x$  plus one. Then, if the average periodicity of  $P_x$  is in the  $[\text{minAvg}, \text{maxAvg}]$  interval, the sum of the iutil values of the utility-list of  $P_x$  is no less than minutil, the minimum/maximum of  $P_x$  is no less/not greater than minPer/maxPer according to the values stored in its utility-list, then  $P_x$  is a PHAUDCI and it is output. Then, if the sum of iutil and rutil values in the utility-list of  $P_x$  are no less than minutil, the number of elements in the utility list of  $P_x$  is no less than, and  $\text{maxper}(P_x)$  is no greater than maxPer. This is performed by merging  $P_x$  with all extensions  $P_y$  of  $P$  such that  $y \vdash x$  to form extensions of the form  $P_{xy}$  containing  $|P_x| + 1$  items. The utility-list of  $P_{xy}$  is then constructed by calling the Construct procedure, to join the utility-lists of  $P$ ,  $P_x$  and  $P_y$ . This latter procedure is mainly the same as in HUI-Miner, with the exception that periods are calculated during utility-list construction to obtain  $\text{maxPer}(P_{xy})$  and  $\text{minPer}(P_{xy})$ . Then, a recursive call to the Search procedure with  $P_{xy}$  is done to calculate its average utility and explore its extension(s). The Search procedure starts from single items, recursively explores the search space of item sets by appending single items, and only prunes the search space. Thus, it can be easily seen that this procedure is correct and complete to discover all PHAUDCIs.

**Optimization 1. Estimated Average Periodicity Pruning (EAPP).** The PAHDCM algorithms creates a structure called EUCS to store the TWU of all pairs of items occurring in the database, and this structure is used to prune any item set  $P_{xy}$  containing a pair of items  $\{x,y\}$



having a TWU lower than minutil. The strategy EAPP is a novel strategy that uses the same idea but prune item sets using the average periodicity instead of the utility. During the second database scan, a novel structure called ESCS (Estimated Support Co-occurrence Structure) is created to store  $|g(\{x, y\})|$  for each pair of items  $\{x, y\}$ .

**Optimization 2. Abandoning List Construction early (ALC).** An-other strategy introduced in PAHDCM is to stop constructing the average utility-list of an item set if a specific condition is met, indicating that the item set cannot be a PAHUDCI

| <b>Algorithm-2: The Search procedure</b> |                                                                                                                                                                                                                                                                                                              |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Input:</b>                            | An itemset P, a set of extensions of P- minutil, minAvg, minPer, maxPer, the EUCS structure,  D  as ExtensionsOfP.                                                                                                                                                                                           |
| <b>Output:</b>                           | The set of periodic high-utility item sets.                                                                                                                                                                                                                                                                  |
| 1.                                       | <b>foreach</b> itemset $P_x \in \text{ExtensionsOfP}$ <b>do</b>                                                                                                                                                                                                                                              |
| 2.                                       | $\text{avgperPx} \leftarrow (\frac{ D }{( P_x.\text{utilitylist} )} + 1);$                                                                                                                                                                                                                                   |
| 3.                                       | if $\text{SUM}(P_{xy}.\text{utilitylist}.\text{iutils}) \geq \text{minutil} \wedge$<br>$\text{minAvg} \leq \text{avgperPx} \leq \text{maxAvg} \wedge$<br>$P_x.\text{utilitylist}.\text{minp} \geq \text{minPer} \wedge$<br>$P_x.\text{utilitylist}.\text{maxp} \leq \text{maxPer}$ <b>then</b><br>output Px; |
| 4.                                       | if $\text{SUM}(P_x.\text{utilitylist}.\text{iutils}) + \text{SUM}(P_x.\text{utilitylist}.\text{rutils})$<br>$\geq \text{minutil} \wedge \text{avgperPx}$ and $P_x.\text{utilitylist}.\text{maxp} \leq \text{maxPer}$ <b>then</b>                                                                             |
| 5.                                       | $\text{ExtensionsOfPx} \leftarrow \emptyset$                                                                                                                                                                                                                                                                 |
| 6.                                       | <b>foreach</b> itemset $P_y \in \text{ExtensionsOfP}$ such that $y \neq x$ <b>do</b>                                                                                                                                                                                                                         |



|     |                                                                                                                 |
|-----|-----------------------------------------------------------------------------------------------------------------|
| 7.  | if $\exists (x, y, c) \in \text{EUCS}$ such that $c \geq \text{minutil}$ )<br>then                              |
| 8.  | $P_{xy} \leftarrow P_x \cup P_y$ ;                                                                              |
| 9.  | $P_{xy}.\text{utilitylist} \leftarrow \text{Construct}(P, P_x, P_y)$ ;                                          |
| 10. | $\text{ExtensionsOfP}_x \leftarrow \text{ExtensionsOfP}_x \cup \{P_{xy}\}$ ;                                    |
| 11. | End                                                                                                             |
| 12. | End                                                                                                             |
| 13. | Search $(P_x, \text{ExtensionsOfP}_x, \gamma, \text{minAvg}, \text{minPer}, \text{maxPer}, \text{EUCS},  D )$ ; |
| 14. | End                                                                                                             |
| 15. | End                                                                                                             |

Further in the implementation of PAHDCM, two additional optimizations were included, which are as described next.

| <b>Algorithm-3: The Construct procedure</b> |                                                                                                                |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Input:</b>                               | An itemset $P$ , $P_x$ the extension of $P$ with an item $x$ , $P_y$ : the extension of $P$ with an item $y$ . |
| <b>Output:</b>                              | The utility-list of $P_{xy}$                                                                                   |
| 1.                                          | $\text{UtilityListOf } P_{xy} \leftarrow \emptyset$                                                            |
| 2.                                          | <b>foreach</b> tuple $ex \in P_x.\text{utilitylist}$ <b>do</b>                                                 |
| 3.                                          | if $\exists ey \in P_y.\text{utilitylist}$ and $ex.\text{tid} = ey.\text{tid}$ then                            |
| 4.                                          | if $P.\text{utilitylist} \neq \emptyset$ then                                                                  |
| 5.                                          | Search element $e \in P.\text{utilitylist}$ such that $e.\text{tid} = ex.\text{tid}$ ;                         |
| 6.                                          | $exy \leftarrow (ex.\text{tid}, ex.iutil + ey.iutil)$                                                          |



|     |                                                                                           |
|-----|-------------------------------------------------------------------------------------------|
|     | ey.iutil – e.iutil, ey.rutil);                                                            |
| 7.  | End                                                                                       |
| 8.  | Else                                                                                      |
| 9.  | exy $\leftarrow$ (ex.tid, ex.iutil + ey.iutil,<br>ey.rutil);                              |
| 10. | End                                                                                       |
| 11. | period <sub>exy</sub> $\leftarrow$<br>CalculatePeriodValue(exy.tid,<br>UtilityListOfPxy); |
| 12. | UpdateMinPerMaxPer(UtilityListOfPxy,<br>period <sub>exy</sub> );                          |
| 13. | UtilityListOfPxy $\leftarrow$ UtilityListOfPxy<br>$\cup$ {exy};                           |
| 14. | End                                                                                       |
| 15. | End                                                                                       |
| 16. | return UtilityListPxy;                                                                    |

The first step is to initialize a variable max with the required value. The second step is as follows, the utility-list of  $P_{xy}$  is constructed by checking if each tuple in the utility-lists of  $P_x$  appears in the utility-list of  $P_y$ . For each tuple not appearing in  $P_y$ , the variable max is decremented by 1. If max is smaller than, the construction of the utility-list of  $P_{xy}$  can be stopped because  $|g(P_{xy})|$  will not be higher.

#### 4. Experimental Setup and Study

We performed an experimental study to assess the performance of PAHDCM. The experiment was performed on a computer with a sixth generation 64-bit Core i3 processor, with Windows 10 Operating System running, and



equipped with 8 GB of RAM. We compared the performance of the proposed PAHDCM algorithm with the state-of-the-art of FHM and PHM algorithms for mining HAUDCIs. We are using java as a programming language to find patterns. The experiment was carried out on four datasets. These datasets have varied characteristics and represents the main types of data. Let  $|I|$ ,  $|D|$  and  $A$  represents the number of transactions, distinct items and average transaction length of a dataset.

In the experiment, PAHDCM was run on each dataset with fixed minper and minAvg values, while varying the minutil threshold and the values of the maxAvg and maxper parameters. In these experiments, the values for the periodicity thresholds have been found empirically for each dataset, and were chosen to show the trade-off between the number of periodic patterns found and the execution time. Thereafter, the notation PAHDCM V-W-X-Y represents the PAHDCM algorithm with minper = V, maxper = W, minAvg = X, and maxAvg = Y.

The below diagram compares the execution times for various parameter values of PAHDCM and PHM, compares the number of PAHUDCIs found by PAHDCM for various parameter values, and the number of HAUIs found by PAHDCM.

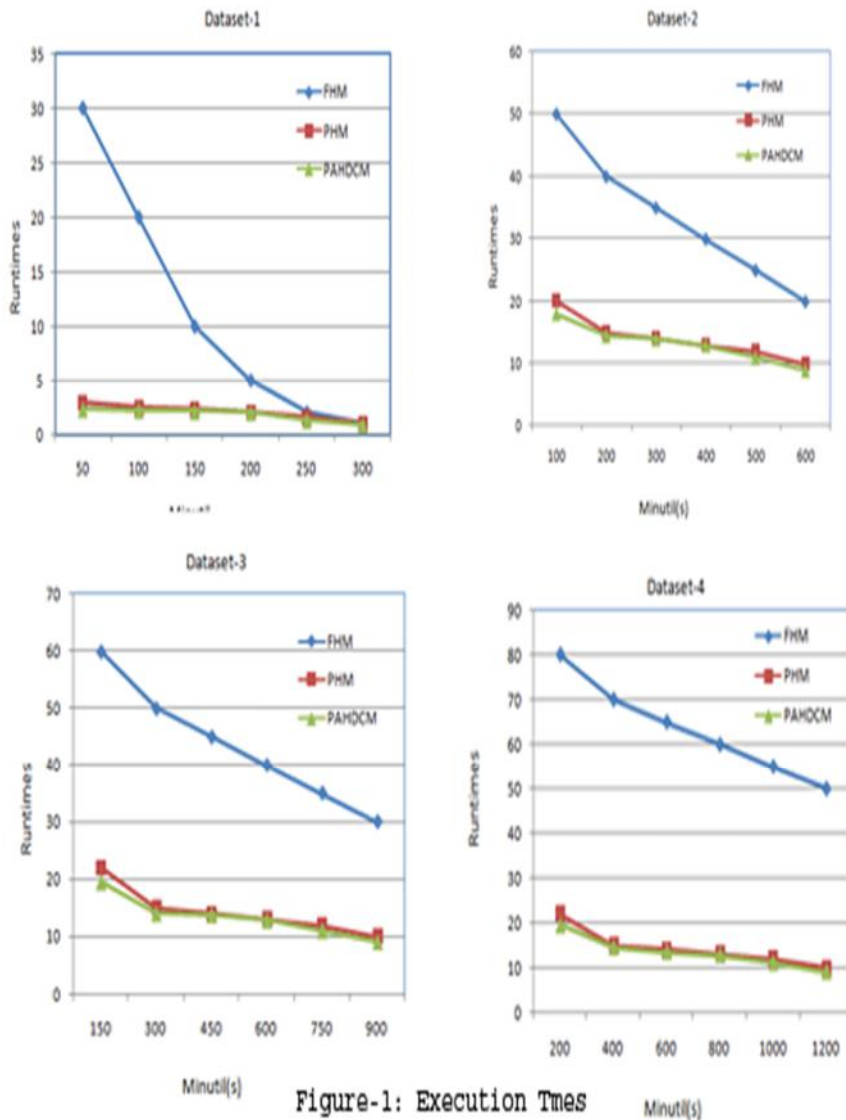
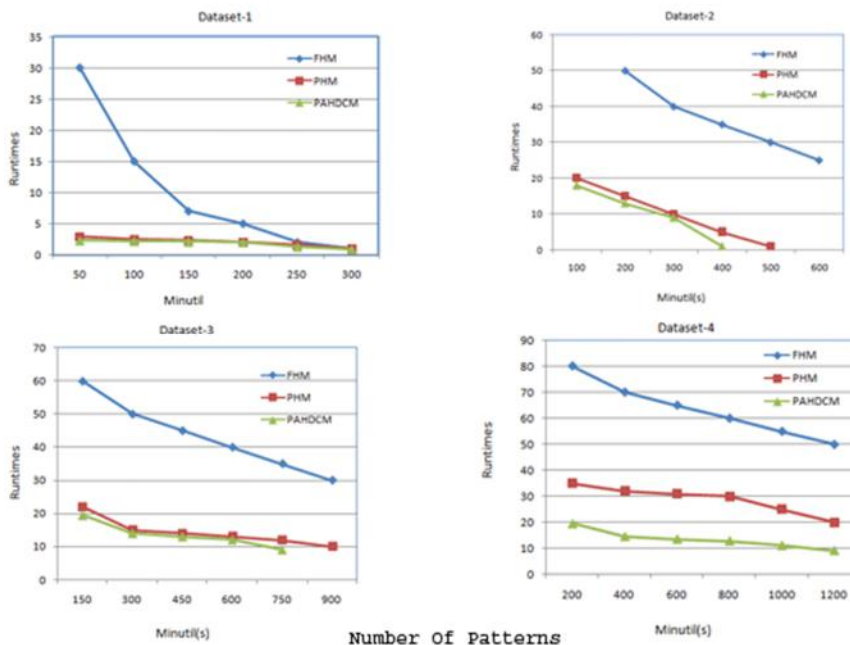


Figure-1: Execution Tmes



Firstly, it can be observed that mining PAHUDCIs using PAHDCM can be much faster than mining HAUIs. The reason for the excellent performance of PAHDCM is that it prunes a large part of the search space using its designed pruning strategies based on the maximum and average periodicity measures. For all datasets, it can be found that a huge amount of HUIs are non-periodic, and thus pruning non periodic patterns leads to a massive performance improvement. For example, for the lowest minUtil, maxPer and maxAvg values on these datasets, PAHDCM is respectively faster than FHM and PHM. In general, the more the periodicity is, thresholds are restrictive and the more the gap between the runtimes of FHM, PHM and PAHDCM, the runtime increases.



## 5. Conclusion and Future Work

This paper explored the problem of mining periodic average high-utility discount category weight-based item sets (PAHUDCIs). An algorithm named PAHDCM (Periodic Average High-utility Discount Categorical Weight-Based item set Miner) was proposed to efficiently discover PAHUDCIs using novel minimum and average periodicity measures. An extensive experimental study with datasets has shown that PAHDCM can be more than faster than FHM and PHM, and discover more than less patterns by filtering non-periodic HUIs. In future we can develop high average discount category weight based periodic pattern mining algorithms using distributed and parallel methods.

## 6. Acknowledgements

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## ROLE OF STATE BANK OF INDIA IN MEETING THE CREDIT REQUIREMENTS OF FARMERS AND THE NEEDY – A CASE STUDY OF WARANGAL DISTRICT

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### Abstract

Govt. of India and State Governments are implementing several schemes for the poor to alleviate their poverty. But they are not reaching the targeted and vulnerable sections of the society. As a nationalised bank and as a governmental agency is also chalking out various schemes for the benefit of its customers as well as the vulnerable sections of the society. This study aims at giving focus on the various poverty alleviation programmes which are in force. It studies the organisation and management of SBI. It brings out the profile of Warangal district. It takes into consideration the perception of the beneficiaries of various schemes and also records the perception of bank officials. Finally the study gives out its findings and suggests some ways and means to improve the banking services to the poor and the needy people. This research paper critically analysed **“The Role of SBI Credit Requirements of Farmers and their needy – A Study of Warangal District”**

**Keywords:** Poverty Alleviation Programmes, Farm sector, Non-farm sector, Field Officer, NRY, RM groups, Action Plan, Kisan Credit Card

### Introduction:

*“It is well enough the people of the nation do not understand our banking and monetary system, for if they did I believe their would be revolution before tomorrow Morning.*

**Henry Ford**

Poor people live without fundamental freedoms of action and choice that the better-off take for granted. They often lack adequate food and shelter, education and health, deprivations that keep them from leading the kind of life that everyone values. They also face extreme vulnerability to ill –health, economic dislocation and natural disasters. They are often exposed to ill treatment by institutions of the state and society and are powerless to influence key decisions affecting their lives. These are all dimensions of poverty. In almost all underdeveloped countries where per capita income is very low, income inequality has resulted in a number of evils, of which poverty is certainly the most serious one. In India, even now in spite of all the development during the past five decades, nearly forty per cent of the population is poor and for most of the time suffers from extreme destitution. No one says that equitable distribution of present income in India will make everyone rich, but there must not be any doubt about the fact that it will ensure the required minimum consumption to all.

### Definition Of Poverty:

Poverty is a complex phenomenon, which cannot be subsumed under a single definition, applicable to all societies and all contexts. It has to be defined in relation to the average living standards in a society and the social reforms and customs acceptable to it at that point of time (Atkinson 1975:186). The very mention of poverty actually conjures up images of destitution, hunger, homelessness, are to put it simply to a general deprivation. Ahluvalia (1978) observes poverty as a complete assessment of trends in rural poverty that should take into account several dimensions of poverty, of which income or consumption level per head is only one equally relevant and factors such as longevity, access to health and education facilities, and perhaps also security of consumption levels from extreme shocks.



## THE POOR FROM AMARTYA SEN'S VIEW POINT:

The poor is not an economic class, nor convenient, category to use for analysing social and economic movements. Poverty is the common outcome of a variety of disparate economic circumstances and a policy to tackle poverty must, of necessity, go beyond the concept of poverty. The need for discrimination is essential. Thus the analysis of poverty is to be conducted in two stages. In the first stage, it has to be sorted out who got how much and then by using some norm of income per head, the poor can be identified. In the second stage, we should attempt, to decide how bad the situation really is, and whether one situation is more outrageous than another. In this context Ben assets, "It is not sufficient to know how many poor people there are, but how exactly poor they are".

## SOME FRANK STATEMENTS ON POVERTY:

NGOs and world-renowned organisations, engaged in finding a solution to the poverty. They have expressed the following Statements:

- Subsidies and anti-poverty programmes cannot remove poverty.
- We have failed in our mission to improve the conditions of poor.
- There is not way to tackle the problem of acute poverty.
- After over 70 years seeking to reduce poverty, many of our past policies were misguided and it needed help to succeed in future.
- Only 15 per cent of the funds allocated for poverty removal programmes is reaching the poor, provided that there were no leakages.
- Urbanisation is not a cure of persisting poverty.
- The practice of increasing the taxes for the rich, hoping it would benefit the poor in society does not work.
- We are not winning the battle against poverty.
- There is dearth of anti-poverty programmes sponsored by the Union and State Governments, they often suffer from a fundamental flaw in their implementation, other options of effective poverty eradication have to be considered.
- Although an outlay of Rs. 35,000 crores is allocated for schemes to uplift the poor every year, the bureaucratic system of implementation has failed to deliver this money to the targeted groups.

## METHODOLOGY:

Both the primary and secondary data is used in this study. The Primary data is collected in the sample area by conducting field interviews with the beneficiaries. The secondary data is collected from magazines, periodicals, journals, Government reports, Bank records and annual reports of RBI in this regard.

## NEED FOR THE STUDY:

The Central and the State Governments are designing various schemes to alleviate poverty for the poor. But they are not reaching to the real beneficiaries. RBI has issued guidelines to the Commercial Banks of India to fulfil the credit needs of the targeted group. This study focuses on the credit needs of small marginal farmers, utilisation of credit for the pre-determined purpose and the problems faced by beneficiaries while taking loan/credit.

## OBJECTIVES OF THE STUDY:

- To evaluate the contribution of SBI in the generation of employment in Warangal District wherever the branches are in operation.
- To focus on the problems faced by the borrowers while obtaining credit from different branches in the context of procedural and managerial aspects.
- To examine the role of SBI in respect of lending to primary sector.
- To study the performance of SBI in implementing various governmental schemes which are meant for the upliftment of the economically weaker sections of the society.
- To appraise the role of SEBI in generating income or providing employment to rural people.



#### **SOME OF THE POVERTY ALLEVIATION PROGRAMMES:**

- Community Development Programme
- Intensive Agriculture District Programme
- Special Group and Area Specific Programme
- Small farmers Development Agency
- Marginal Farmers and Agricultural Labourers Scheme
- Drought Prone Area Programme
- National Rural Employment Programme
- Integrated Rural Development Programme
- JawaharRozgarYojana
- Employment Assurance Scheme
- Public Distribution System
- Wage Employment Programme
- Development of Women and Children in Rural Areas
- Rural Works Programme
- Food for Work Programme

#### **EVOLUTION OF STATE BANK OF INDIA**

State Bank of India (SBI) is an Indian multinational public sector bank and financial services statutory body headquartered in Mumbai, Maharashtra. It is a public sector bank and the largest bank in India with a 23% market share by assets and a 25% share of the total loan and deposits market. It is also the fifth largest employer in India with nearly 250,000 employees. The bank descends from the Bank of Calcutta, founded in 1806 via the Imperial Bank of India, making it the oldest commercial bank in the Indian Subcontinent. The Bank of Madras merged into the other two presidency banks in British India, the Bank of Calcutta and the Bank of Bombay, to form the Imperial Bank of India, which in turn became the State Bank of India in 1955. Overall the bank has been formed from the merger and acquisition of nearly twenty banks over the course of its 200 year history. The Government of India took control of the Imperial Bank of India in 1955, with Reserve Bank of India (India's central bank) taking a 60% stake, renaming it State Bank of India.

#### **POVERTY ALLEVIATION SCHEMES IN INDIA SUPPORTED BY STATE BANK OF INDIA:**

- Jawahar Gram Samridhi Yojana (JSY)
- National Old Age Pension Scheme (NOAPS)
- Sampoorna Grameen Rozgar Yojana.
- National Family Benefit Scheme (NFBS)
- National Maternity Benefit Scheme.
- Annapurna.
- Integrated Rural Development Program (IRDP)
- Pradhan Mantri Gramin Awaas Yojana.

#### **SBI AGRICULTURE LOAN**

State Bank of India has been a pioneer and a market leader in agriculture-financing in India with portfolio of over Rs.1,20,000 crore in agricultural advances that covers more than 1.1 lakh farmers and their families. SBI caters to the agriculturists and farmers needs and has a vast network of 10,505 urban and rural branches.

#### **TYPES OF AGRICULTURAL LOANS FROM SBI :**

The different types of agricultural loans offered by SBI are listed below:



## 1.Crop Loan

This loan covers the expenses related to crop production, post-harvest activities, contingencies, etc. Borrowers are provided a Kisan Credit Card, a type of electronic Rupay Card, using which they can withdraw money from ATMs with ease. These cards can also be used for purchasing fertilizers for the farm.

Key Features and Benefits of the Kisan Credit Card (KCC) Scheme:

- The credit balance in the KCC account gets interest at the savings bank rate.
- State Bank Kisan Card is a free ATM cum debit card that is available to all KCC borrowers.
- For a loan amount up to Rs.3 lakh, interest subvention at 2% p.a. is given.
- If the borrower makes timely repayments, he/she gets additional interest subvention at 3% p.a.
- For all KCC loans, specific areas or crops are offered crop insurance.
- In the case of non-repayment before the due date, the interest will be at the card rate. For non-repayment after the due date, interest is compounded half-yearly.

### Eligibility for KCC Scheme:

- All farmers and joint cultivators
- Tenant farmers, share croppers, and oral lessees
- Joint liability groups and self-help groups, including tenant farmers

## 2. Gold Loan

Individuals can get loans for agricultural purposes by pledging gold ornaments. These loans have attractive interest rates and are disbursed almost immediately. All farming activities can be covered through these loans. The two types of gold loans available to farmers are the Agri-Gold Loan for Crop Production and Multi Purpose Gold Loan.

### Agri-Gold Loan for Crop Production

Key Features and Benefits:

- These loans can be availed by pledging gold ornaments.
- The entire loan process is easy and convenient.
- The loan is provided at 10,000 SBI bank branches.

|               |                                                                                                                                     |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Interest Rate | Up to Rs.3 lakh – 7% p.a. More than Rs.3 lakh – 9.95% p.a.                                                                          |
| Margin        | As per the Loan To Value Ratio fixed by the bank                                                                                    |
| Repayment     | For Demand Loan – 12 months after loan disbursement For Overdraft/Cash Credit – Limit is reviewed annually and is valid for 3 years |
| Collateral    | Pledge of gold ornaments                                                                                                            |

### Eligibility for Agri Gold Loan for Crop Production:

All farmers doing short-term crop production are eligible for the loan.

Documents Required:

- Application form, duly filled
- 2 passport size photos of the borrower
- ID proof - PAN Card, Voter ID, Aadhaar Card, Passport, or Driving License
- Address proof - Voter ID, Aadhaar Card, Passport, or Driving License
- Proof of agricultural crops or land

### Multi Purpose Gold Loan

Key Features and Benefits:

- Low interest rates.
- The loan process is easy and convenient.



- There are no hidden charges.
- The repayment schedules are flexible.
- Loans are available at all semi urban and rural bank branches.

Interest Rate 9.95% p.a.

Collateral Pledge of gold ornaments

### 3. FARM MECHANIZATION LOAN

These loans are offered for purchasing power tillers, tractors, combine harvesters, etc. An individual can also avail this loan without any collateral. The different types of farm mechanization loans are detailed below:

#### A. Tractor Loan

**This includes four types of loan schemes:**

- **SSTL (Mortgage free)**

Key Features and Benefits:

- The Stree Shakti Tractor Loan scheme has a low interest rate and is a mortgage-free loan.
- The loan will be sanctioned within 3 days.
- There is a monthly repayment option.

Interest Rate 11.20% p.a.

Eligibility Criteria:

- The borrower or co-borrowers should only be women.
- There should be at least 2 acres of agricultural land in the name of the applicant.
- The annual income of the borrower should be at least Rs.1.5 lakh.

Documents Required:

**Pre-sanction documents:**

- Application form, duly filled
- 3 passport size photos of the borrower
- ID proof – PAN Card, Voter ID, Aadhaar Card, or Passport
- Address Proof - Voter ID, Aadhaar Card, or Passport
- Documented proof of land
- Income proof – Certificate from the revenue authority
- Quotation of the tractor that the dealer issues to the customer

**Pre-disbursement documents:**

- **Loan documents**
- **6 post-dated cheques**

Key Features and Benefits:

- **This is a tractor loan taken against a collateral.**
- **The loan has a low interest rate.**
- **The loan will be sanctioned within 3 days.**
- **There is a monthly repayment option.**

Interest Rate 10.95% p.a.

Eligibility Criteria:

- The borrower or co-borrowers should only be women.
- There should be at least 2 acres of agricultural land in the name of the applicant.
- The annual income of the borrower should be at least Rs.1.5 lakh

Key Features and Benefits:

- **This loan can be taken for the purchase of a tractor and its implements, accessories, insurance, and registration.**



- There is no upper limit on the quantum of loan.
- The loan processing will be completed within 7 days from the document submission date.
- The repayments can be done monthly, quarterly, or annually.
- In the event of prompt repayment, there will be a concession of 1% p.a. on the interest rate.

Interest Rate 11.95% p.a.

**Eligibility Criteria:**

- There should be at least 2 acres of agricultural land in the name of the applicant.

**Key Features and Benefits:**

- This is a mortgage-free tractor loan scheme
- The loan turnaround time is just 48 hours.
- The borrower gets free personal accident insurance cover worth Rs.4 lakh.
- The interest rate on this loan is very low.
- There is no processing fee.
- The loan can be repaid in monthly, quarterly, or half-yearly frequencies.

|               |                                    |
|---------------|------------------------------------|
| Interest Rate | • When margin is 25% - 11.20% p.a. |
|               | • When margin is 35% - 10.95% p.a. |
|               | • When margin is 50% - 10.55% p.a. |

**Eligibility Criteria:**

- All farmers (individually or as joint borrowers) who own and cultivate land can apply.
- There should be at least 2 acres of agricultural land in the name of the applicant.

**Documents Required:**

**Pre-sanction documents:**

- Application form, duly filled
- 3 passport size photos of the borrower
- ID proof – PAN Card, Voter ID, Aadhaar Card, or Passport
- Address Proof - Voter ID, Aadhaar Card, or Passport
- Documented proof of land
- Quotation of the tractor that the dealer issues to the customer

**B. COMBINE HARVESTER LOAN**

This loan is taken for the purchase of a combine harvester and its accessories. The loan should be repaid in half-yearly instalments. The key features of the loan are as shown below:

Interest Rate 12% p.a.

**Eligibility Criteria:**

- All farmers who can operate combine harvesters can apply.
- There should be at least 8 acres of irrigated land in the name of the applicant.

**C. DRIP IRRIGATION LOAN**

This loan is taken to purchase a drip irrigation system. The key features of the loan are as follows:

Interest Rate 12% p.a.

**Eligibility Criteria:**

- All farmers who own land and are involved in agricultural activities can apply.



#### 4. Allied Activities

This category consists of three types of agricultural loans:

##### I. DAIRY LOAN

This loan is offered to dairy societies for the creation of the following infrastructure:

- Construction of milk house or society office
- Automatic milk collection system purchase
- Transport vehicle purchase
- Bulk chilling unit purchase

##### Dairy Farm Business Loan

The key features of the loan are as shown below:

Interest Rate 12.10% p.a.

Loan Amount: This is usually 85% of the cost of the project or 4 times the average profit for the past 2 years (maximum limit is Rs.10 lakh).

The maximum loan limit is also restricted as indicated below:

- If the loan purpose is to set up a milk house or society office – Rs.2 lakh
- If the loan purpose is to purchase an automatic milk collection system – Rs.1 lakh
- If the loan purpose is the purchase of a milk transportation vehicle – Rs.3 lakh
- If the loan purpose is the purchase of a chilling unit – Rs.4 lakh

Documents Required:

- Application form, duly filled
- Undertaking from the milk union for deduction and payment of the instalment amount for repayment
- In case a loan was taken from another bank previously, liquidation and no-dues certificate
- Audited balance sheet for at least two preceding years

##### II. POULTRY LOAN

This loan can be availed by farmers for the construction of feed rooms, poultry shed, and other equipment. The key features of the loan are as detailed below:

Interest Rate 12.10% p.a.

\*\*This should cover at least 50% of the advance

Eligibility Criteria:

The loan can be availed by an individual who has experience in poultry farming and has land for the construction of poultry sheds.

##### III. FISHERIES LOAN:

This loan can be availed for the purchase of fish net, fish seeds, and other related equipment. The key features of the loan are as detailed in the table below:

Interest Rate 12.10% p.a.

Eligibility Criteria:

All professional fishermen and farmers with knowledge in pisciculture can apply for the loan.

#### 5. MISCELLANEOUS ACTIVITIES

This category consists of five types of agricultural loans:

##### A. PRODUCE MARKETING LOAN:

The purpose of this loan is as described below:



- To assist farmers so that they do not sell their products in distress.
- To help in the prompt repayment of crop loans.
- To offer liquidity to farmers for meeting emergency financial needs.
- To offer loan against stocks in farm houses and loan against warehouse receipts.

The key features of the loan are as listed below:

Loan Amount 60% to 80% of the total produce value\*

Repayment Within 12 months\*\*

Eligibility Criteria:

- All non-defaulter borrowers of SBI who can store the produce in a warehouse or their own farms
- All non-borrower farmers and crop loan borrowers of other banks who can store their produce in warehouses

## B. SETTING UP OF AGRI CLINIC AND AGRI BUSINESS CENTRES

This loan provides self-employment opportunities to individuals who are trained in agriculture extension services. The loan can be availed by applicants engaged in the following activities:

- Water and soil quality testing laboratories
- Diagnostic, post surveillance, and control services
- Repairs, maintenance, and custom-hiring of machinery related to micro irrigation systems
- Agri service centres that work on the three activities listed above (group activities)
- Seed processors
- Micro propagation through plant tissue culture labs
- Construction of bio-fertilizer, vermiculture, and bio-pesticide units
- Construction of apiaries and related processing units
- Provision of agri insurance services
- Consultancy services
- Hatcheries and aquaculture production units
- Livestock health cover provision, construction of veterinary dispensaries/semen banks/liquid nitrogen supply units
- Construction of information technology kiosks in rural areas for the provision of agriculture portal access
- Feed processing and testing technology
- Value addition units
- Construction of cool chain from the farm level (group activities)
- Management centres for post-harvest activities like sorting, standardisation, storing, and packaging
- Construction of metallic and non-metallic storage units (group activities)
- Retail marketing outlets for agri produce that is processed
- Rural marketing dealership for farm output

The key features of the loan are as listed below:

- In the case of group activities, if a group has more than 5 members, all except one should be trained agri-graduates under the scheme. The remaining person should be a non agri-graduate who has experience in business management.
- For loans within Rs.5 lakh, the loan amount provided will be 100% of the cost of the project.
- For loans more than Rs.5 lakh, the loan amount provided will be 85% of the cost of the project.
- The bank offers a composite subsidy of 44% of the project cost for women borrowers, SC/ST category applicants, and candidates from the North East and hill stations. 36% subsidy is provided for other categories of applicants. There is no interest charged on the subsidy amount.

Loan Amount

- Individual activities – Rs.20 lakh\*
- Group activities – Maximum of Rs.100 lakh



Soft Loan The applicant's 50% share of the margin will be provided by NABARD as a soft loan. There will be no interest on this amount.

\*Rs.25 lakh is provided for projects that have achieved success

#### Eligibility Criteria:

- Graduates in agriculture from State and Central universities and institutions recognised by ICAR/UGC
- Degree-holders in agriculture from other universities are also considered based on the approval from the Department of Agriculture and Cooperation
- Diploma holders in agriculture subjects from recognised universities
- Biological science graduates with post-graduation degree in agriculture subjects
- Graduates of degree courses that are recognised by UGC with more than 60% content in agriculture
- Candidates of diploma courses that have more than 60% content in agriculture subjects
- Candidates of agriculture courses at plus two level with a minimum of 55% marks
- Candidates of courses allied to agriculture, i.e., animal husbandry, horticulture, dairy science, forestry, poultry, pisciculture, etc.

#### C. LAND PURCHASE SCHEME

This loan is offered to small farmers and landless agricultural labourers for the purchase of land. Applicants should be existing borrowers who are looking to consolidate land holdings and develop wastelands.

The key highlights of the loan are as indicated below:

- The loan can be taken for the procurement of irrigation facilities and development of land.
- The loan amount can be used for the purchase of farm equipment and registration purposes.

Loan Amount 85% of the cost of the land\*

#### Eligibility Criteria:

- Small farmers who own less than 5 acres of unirrigated land
- Marginal farmers who have 2.5 acres of irrigated land
- Landless agricultural labourers
- Applicants should have a great track record of previous loan repayment

Particulars of beneficiaries who have taken loan to alleviate their poverty under the following schemes:

Table: 1  
Beneficiaries Loan Particulars:

| Name of the Scheme       | No. of beneficiaries | Percentage |
|--------------------------|----------------------|------------|
| Dairy Farm Business Loan | 10                   | 16.67      |
| TRYSEM                   | 12                   | 20.00      |
| SCAP                     | 07                   | 11.67      |
| ITDA                     | 12                   | 20.00      |
| SETWAR                   | 04                   | 6.67       |
| OTHERS                   | 15                   | 25.00      |
| TOTAL                    | 60                   | 100.00     |

From the above table we derive the information that 15 out of 60 beneficiaries (25 percent) have taken loan/credit from the banks based upon their agricultural lands and other properties. 12 out of 60 beneficiaries (20 percent) beneficiaries under ITDA and the same number also under TRYSEM. The proportion of borrowers under SCAP



(Scheduled Caste Action Plan) are 11.67 per cent due to illiteracy and lack of information. The bank officials have not shown any interest to motivate people to have credit under SETWAR scheme. 10 out of 60 beneficiaries 916.67 per cent availed credit under Dairy Farm Business Loan scheme due to the wide publicity given by banking agencies.

**Table 2:**  
**Securities demanded by the bank while sanctioning credit/loan**

| Type of Security | No. of beneficiaries | Percentage |
|------------------|----------------------|------------|
| Land Security    | 37                   | 61.67      |
| Group Security   | 14                   | 23.33      |
| Deposits         | 3                    | 5.00       |
| Gold Ornaments   | 6                    | 10.00      |
| Total            | 60                   | 100.00     |

The above table reveals that 37 out of 60 beneficiaries (61.67 per cent) have surrendered their land documents for the sanction of credit. The bank officials insist on some guarantee to avoid the risk of defaulting. 14 out of 60 beneficiaries (23.33 per cent) have given group security. Most of the beneficiaries who have taken credit on the basis of group security are self help groups. 3 out of 60 beneficiaries (5 per cent) have taken loan on the basis of deposits (Fixed deposits). 6 out of 60 beneficiaries (10 per cent) have taken credit by mortgaging their gold ornaments for loan period ranging from 6 months to 1 year.

**Table: 3**  
**Beneficiaries perception on the usefulness of SBI**

| Beneficiaries Perception | No. of beneficiaries | Percentage |
|--------------------------|----------------------|------------|
| SBI is Useful            | 38                   | 63.33      |
| SBI is not Useful        | 22                   | 36.67      |
| Total                    | 60                   | 100.00     |

The above table reveals that majority of the beneficiaries 63.33 per cent have expressed that the schemes introduced by SBI for Poverty Alleviation are useful to the community. They also said that the rate of interest is low when compared with other nationalised banks and the branches of SBI spread far and wide even to reach the people of remote villages. 36.67 per cent of beneficiaries expressed that SBI was not useful to them. They pointed out several reasons. First one, delay in the sanction of loan amount, second one, the loan sanctioned by the bank was insufficient to meet their requirement. Third one, implementing strict rules in recovery of loan amount.

#### Review of Literature:

- Ahluwalia, M.S. has presented in his paper the rural poverty in India, from 1956-57 to 1973-74. He pointed out the several reasons for the rural poverty and strategies to be adopted to eradicate poverty in India.
- Government of India under the chairmanship of G.V. Ka committee to review the existing administrative arrangement of rural development and poverty alleviation programmes in the country.
- Haque, T. (1988) presented papers to the seminar on inter relationships between science and technology for the eradication of poverty in India. He stressed the role of technological change in improving the economic conditions of small farmers, marginal farmers and landless labourers in India.
- The Planning Commission appointed Expert Committee chaired by Late Dr. Lakadawala to review the Estimates of Rural Poverty keeping in view the price index rise from 1985-90. The Expert Committee submitted its report in 1993.

#### CONCLUSIONS AND SUGGESTIONS:

It is estimated that about 75 million households need financial assistance in India, 60 million in the rural areas, and 15 million in urban area. Poor people desperately need credit. India being an agricultural country with more than 70 per cent of its population staying in rural area, land is very inextricably connected with poverty. It is the



agricultural economy which actually propels and moves the nation's economy and a lot is dependent on it. The failure of monsoon or a drought like situation has a reeling effect on other sections as well. Even now we have not moved towards completely industrialized economy. During last 2 decades, various studies on default of agricultural credit have conducted by different agencies. They are NABARD study in the recovery of nine states. Datey Committee of Agriculture Lendingby Commercial Banks, Interestingly all these studies have revealed that 50 per cent of the cases willful default is the main cause of poor recovery. The level of over-dues is higher for investment credit than for crop loans. Large farmers default more than the small farmers.

In this study the following suggestions have been made to improve the performance of SBI in Poverty Alleviation Programmes:

- The bank executives should take proper care and action while selecting the beneficiaries for lending credit/loan in their operational area whosoever come under target groups.
- The bank officials have to arrange Loan Mela programmes at the convenient place to be beneficiaries to avoid delay in lending.
- The SBI has to grant various concessions to rural industrial units in a bid to improve their performance.
- Govt. should provide free training and guidance to farmers to bring awareness on technological advancements, new methods of farming and credit schemes meant for them.

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