

NARAC

ISSN: 2349 - 0217

CARMEL BLAZE

A JOURNAL OF MULTIDISCIPLINARY RESEARCH



CARMEL COLLEGE

MALA - 680732

Volume 7

Issue 1

July 2015

CARMEL BLAZE

A JOURNAL OF MULTIDISCIPLINARY RESEARCH

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(Nationally Re-Accredited with 'A' Grade)

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From the Editor's Desk

Carmel Blaze is an annual research journal that addresses both applied and theoretical issues which contribute to the understanding of Science and Humanities and also developments of the Engineering Technology and Education. The scope of the journal encompasses research articles, original research reports, reviews, short communications and scientific commentaries. The contribution should be unpublished before and not under consideration for publication elsewhere.

Knowledge is enough to make productive career but nowadays competition is so tough that higher education is must to make a mark at higher level. It doesn't really matter that whether we are interested in history or science, computer or management, higher education will provide you that extra bit of ease to pick up much required speed at corporate level in beginning. But main question is how to make higher education more productive. It does not depend on university or college to be selected or it's a course selection that makes all the difference. Actually that makes difference is research in technical and higher education which holds the level holds its own importance. Main goals of research in education are gaining insight, developing reflective practice, effecting positive changes in the academic environment and improving student outcomes and the lives of those involved.

Behind the classroom door the key factor in the success of a lesson, in determining whether the students actually learn something that matters, is the creative ability of the teachers — their ability to combine theory and practical classroom experience. Theory alone will not result in effective teaching. Nor will practice alone result in truly excellent teachers engaged in the learning process. Critical to this process is the teacher's knowledge of the subject content, and his/her ability to implement new strategies, to develop effective performance tasks, to design appropriate assessment tools, and to address the different student learning styles. Little of this can be accomplished if teachers are not knowledgeable of new research, and determined to implement it. Effective teaching therefore involves the practical application of new research/theory in a classroom environment. Reports of new research findings are important to fuel novel assumptions and discoveries that can only be in existence through the publication

This Journal provides a glimpse into a few of the many quality research activities conducted by the talented faculties of our institution and nearby. We would like to thank all the contributing authors for providing such a rich variety of research articles on a broad range of exciting topics.

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GC-MS ANALYSIS OF THE LEAVES OF *PUERARIA PHASEOLOIDES* (ROXB.) BENTH.

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ABSTRACT

In this study the composition of ethanol extract of the leaves of *P. phaseoloides* was analysed by GC-MS. Twenty one different compounds were identified and they are mainly the Hydrocarbons, Sesquiterpenens and fatty acids. The retention times and peak areas of the identified constituents are presented in a table. The six main constituents identified were 2H,1-Benzopyran, 3, 5, 6, 8 α -tetrahydro-2, 5,5, 8 α -tetramethyl-, Cis-, 2(4H)-Benzofuranone, 5, 6, 7, 7 α -tetrahydro-4, 4,7 α -trimethyl-, (R)-, 3, 7, 11, 15-Tetramethyl-2-hexadecen-1-01, Oct-3-ene-1, 5-diyne, 3-t-butyl-7, 7-dimethyl, Phytol, Squalene.

Key words: GC-MS, Squalene, Sesquiterpenens and hydrocarbons

Introduction

Pueraria phaseoloides (Roxb. Benth. (Papilionoideae) is Vigorous, deep-rooted, perennial twining and climbing legume, slightly woody, and hairy. Its main stems are slender, rooting at the nodes upon contact with moist soil. Young shoots are densely covered with brown hairs. Leaves large, trifoliate, borne on petioles and covered with ascending hairs. Leaflets thin, triangular-ovate, usually very shallowly lobed; lateral leaflets oblique, and wide. Flowers small, mauve to deep purple, borne in scattered pairs in axillary racemes.

about 15-30 cm long, on peduncles about 12.5 cm long. Pod straight, or slightly curved, linear, cylindrical thinly covered with stiff adpressed hairs, turning black when ripe. Seeds, oblong to squarish with rounded corners, brown to brownish black in colour. *P. phaseoloides* is native to Southern China. Naturalised throughout the humid-tropics. The tuberous root can be eaten.

The aim of the study was to investigate the composition of the ethanol extract of the leaves of *Pueraria phaseoloides* by GC-MS.

Materials and Methods

Plant Collection

Fresh leaves of the plant was collected from the river banks of Chalakudy, Thrissur dt, Kerala and the plant name was confirmed by comparing it with the Herbarium specimen in KFRI (Kerala Forest Research Institute). A voucher specimen was submitted in Rapinat Herbarium, Tiruchirappalli.

Extraction

Finely chopped fresh leaves of *Pueraria* were extracted by hot extraction process using a soxhlet extraction device with solvent ethanol, for 72 hrs at a temperature not exceeding the boiling point of the solvent. The filtrates were concentrated in vaccum rotary evaporator at 60°C in order to reduce the volume. The paste like extracts were stored in labeled screw capped bottles and kept in refrigerator at 4°C.

GC/MS Analysis

The extracts were subjected to GC-MS. Gas chromatography-Mass Spectrometry analysis was performed with an Fisons GC-MS

instrument. A Splitless mode was chosen with helium as carrier gas. The column was DBS MS of 30 m in length, 0.25 mm in diameter and 0.25 mm film thickness and μ (1 mg/ml) the active fractions (Substances) dissolved in ethanol was injected in the following conditions, injector temperature, 280°C carrier gas, helenin, Pressure 150 Kpa, Ionisation mode E⁺ solvent delay (min) 2.00, temperature gradient, 20°C per minute from 100 to 315°C. The analysis was carried out at the Food Analysis Laboratory at Thanjavur, South India.

Result and Discussion

Twenty one different compounds were identified in the ethanol extracts leaves of *Pueraria phaseoloides*. The identification of these constituents was made by the direct comparison of their retention times (RT) and mass spectra fragmentation with those in NIST (National Institute of Standards and Technology) Library, NIST (National Institute of Standards and Technology) Library, and the published literatures. Some of the phytochemical components of ethanol extracts of *Pueraria leaves* are presented in the Table1 showing their Retention Times and Peak areas. In total (21) constituents were identified and the major constituents present in the leaf alone are presented in the Table 2.

Previous phytochemical analysis have reported the presence of various isoflavonoids of high antioxidant properties including daidzin, genistin, tectoridin, and puerarin, in *Pueraria tuberosa* [1], [2], [3], [4]. Puerarin, highly abundant in *P.tuberosa*, has hypothermic, spasmolytic, hypotensive, and anti arrhythmic activities [5]. Therapeutic effect of puerarin on diabetic nephropathy has been

reported [6]. Crude extracts of *P.tuberosa* have contraceptive effects and induce uterine changes in rats [7]. Plant derivatives also demonstrate hypocholesterolemic effects [8]. This is also important in the treatment of alcohol dependency due to inhibition of alcohol transport across the gut membrane [9].

Pueraria tuberosa possesses lupinoid which can prevent damage of insulin activity by free fatty acid [10]. The presence of biologically active compounds such as phenols, polyphenols, tannins, alkaloids flavanoids and terpenoids in various plants are known to possess antibacterial activity [11]. The leaves of *Pueraria phaseoloides* possess phytol which have Antimicrobial, Anti-inflammatory, Diuretic and Anticancer effect. Squalene has antibacterial, Antioxidant, Antitumour, cancer preventive, Immunostimulant, Chemo preventive, Lipoxigenase-inhibitor and pesticide activity.

Glycerin an antimicrobial preservative is present. Octanoic acid, is an insecticide and has antimicrobial effect. 2-Furancarboxaldehyde,5-(hydroxyl methyl)- is an antimicrobial preservative. Asarone is Antipyretic Antispasmodic, Emetic, Fungicide, Mutagenic, Sedative Myorelaxant, tranquilizer, pesticide, cardio depressant, Psychoactive, and Anticonvulsant.

Conclusion

Pueraria tuberosa which seems almost extinct in vast tracts of the Eastern and western Ghats of India. *Pueraria phaseoloides* possesses a vast array of valuable compounds and it can be used instead of *Pueraria tuberosa*. Though *Pueraria phaseoloides* is an underutilised species it can be a valuable alternative to much sought after *Pueraria tuberosa*.

Table 1: Some of the GC-MS Constituents of the Leaves of *Pueraria phaseoloides*, Ethanol extract

Serial No.	Retention Time	Name of the Compound	MW	Compound Nature	Peak area%
1	4.13	Glycerin	92	Alcohol	4.63
2	6.22	1- Butanol,3-methyl, formate	116	Alcohol	5.74
3	15.71	2H.1-Benzopyran, 3, 5, 6, 8a-tetrahydro -2, 5,5, 8a- tetramethyl-, Cis-	192	Aromatic Compound	0.13
4	16.67	2(4H)- Benzofuranone, 5, 6, 7, 7a- tetrahydro - 4, 4, 7a- trimethyl -, (R)	180	Aromatic Compound	0.26
5	17.39	Dodecanoic acid	200	Lauric acid	1.09
6	24.39.	3, 7, 11, 15 – Tetramethyl- 2-hexadecen – 1-01	296	Tetrapene alcohol	1.19
7	27.76	Oct- 3- ene-1, 5-diyne, 3- t- butyl - 7, 7- dimethyl	188	Unsaturated hydrocarbon	0.87
8	28.71	Phytol	296	Diterpene	2.75
9	41.02	Squalene	410	Triterpene	3.06

Table 2: Phytochemical Compounds in Leaf alone

1	2H.1-Benzopyran, 3, 5, 6, 8a- tetrahydro -2, 5,5, 8a-tetramethyl-, Cis-
2	2(4H)- Benzofuranone, 5, 6, 7, 7a- tetrahydro - 4, 4, 7a-trimethyl -, (R)-
3	3, 7, 11, 15 – Tetramethyl- 2-hexadecen – 1-01
4	Oct- 3- ene-1, 5-diyne, 3- t- butyl -7, 7- dimethyl
5	Phytol
6	Squalene

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PREPARATION AND CONDUCTIVITY STUDIES OF POLY(P-PHENYLENEDIAZOMETHINE)/POLY (VINYLCHLORIDE) BLENDS

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Introduction

Conducting polymer composites have drawn considerable interest in recent years because of their numerous applications in a variety of areas of electrical and electronic industry¹⁻³. In most of these applications, the main concern is to obtain sufficient level of conductivity in the material. Preparation of blends, composites and interpenetrating network has been widely used as an approach to combine electrical conductivity with desirable mechanical strength of polymers⁴. Several attempts have been described to produce conducting polymer composites with better physical properties by either chemically or electrochemically⁵⁻⁹. Charge transport mechanism in conducting polymer composites was reported by Radhakrishnan et.al.¹⁰.

The present study involves In-situ polymerization of glyoxal and p-phenylenediamine in different solvents containing different amounts of PVC. The d.c. conductivity and microwave conductivity of each sample was measured. The effect of dopants like HClO₄, HCl and I₂ on conductivity was also studied.

Experimental

Materials used

Paraphenylene diamine, Glyoxal hydrate (trimer), Polyvinyl chloride, N, N-Dimethyl formamide, Toluene, Tetrahydrofuran, Methanol, Acetone, Hydrochloric acid, Perchloric acid, Iodine, and Carbon tetra chloride.

Synthesis of poly(p-phenylenediazomethine)-Polyvinylchloride blends

PVC (5g) was dissolved in 50 ml of Tetrahydrofuran. 0.1 mole of p-phenylene diamine was added to 300 ml of N,N-dimethylformamide and was dissolved in it by stirring. Then 0.1 mole of glyoxal was added to it and stirred well. The solution of PVC in THF was added to the above reaction mixture and stirred well. Then the temperature of the reaction medium was increased slowly to boiling, with continuous stirring, and was refluxed at the boiling temperature for 4 hours. By that time, the precipitation of the product takes place. It was then allowed to cool to room temperature and then poured into excess of ice-cold water with stirring. It was allowed to settle, filtered, washed with plenty of water until the filtrate was colourless. Then it was washed with methanol, and allowed to dry at room temperature in air for one day. Then the final drying of the sample was done at 70°C in vacuum.

The same procedure was repeated by varying the amount of PVC. For this, 10 gm of PVC was dissolved in 100ml of THF, 15 gm of PVC was dissolved in 150ml of THF, and 20 gm of PVC was dissolved in 200ml of THF and was added to the reaction mixture containing glyoxal and p-phenylenediamine in DMF.

The dried sample was powdered well, and, pelletized for the density and d.c. conductivity measurements. For the spectral and thermal studies, the sample was extracted with acetone until the extract was colorless, and dried well.

Doping

1g each of the sample was added to 50ml each of 1M HCl solution, 1M HClO₄ solution and saturated solution of I₂ in CCl₄ and kept for 24 hours. Then it was filtered, washed with a little amount of acetone and dried at 70⁰ C in dynamic vacuum for one hour.

Measurements

IR spectra

Particles of the polymer samples were flattened by means of cold compression between two diamond windows. IR spectra of the samples were recorded with a Biorad UMA 500infrared microscope, which is coupled to a Biorad FTS 6000 spectrometer. Spectra were recorded with a resolution of 4 cm⁻¹ co-adding 100 scans.

D.C. conductivity

D.C. conductivity of the pressed pellets was determined by the two-probe technique. The samples were sandwiched between two copper electrodes and a constant voltage (6V) was applied to the sample. The current flowing through the sample was measured using a digital multimeter (APLAB model 1087). The conductivity of the sample was calculated using the equation, $\sigma = t / RA$, where 't' is the thickness of the pellet, 'R' is the resistance of the sample ($R = E / I$, where 'E' is the applied voltage and 'I' is the resulting current through

the sample), and 'A' is the area of cross section of the pellet ($A = \pi r^2$, where 'r' is the diameter of the pellet).

Density

Density of the pressed pellets were determined using the equation, $D = M/V$, where 'M' is the mass of the pellet and 'V' is the volume of the pellet.

Results and discussion

Figure 1 gives the IR spectrum of the conducting polymer-polyp-phenylenediazomethine- blends with PVC. A broad band existed between 3200 and 2400 cm^{-1} . These bands can be assigned to the $-(\text{N-H}_x)\text{-Cl}$ stretching vibration of amine salts. Other spectral bands were due to the conducting polymer. Some more absorption bands can be ascribed to the PVC spectrum. Figure 2 compares the IR spectrum of the conducting polymer with that of the blend. Some of the spectral bands were common in both of the spectra. From these, we can conclude that conducting polymer was incorporated into the PVC matrix.

As the amount of PVC was increased in the blends, the solubility of the polymer was increased. This may be due to the effect of two solvents, THF and DMF, in the reaction medium, or, it may be due to the removal of HCl from PVC by the action of heat during the course of the reaction. The presence of acid was found to increase the solubility of the conducting polymer. In concentrated acids, the polymer was soluble at high temperature. So the processability of the conducting polymer can be improved by making its blends with PVC without any chemical change in the polymer structure.

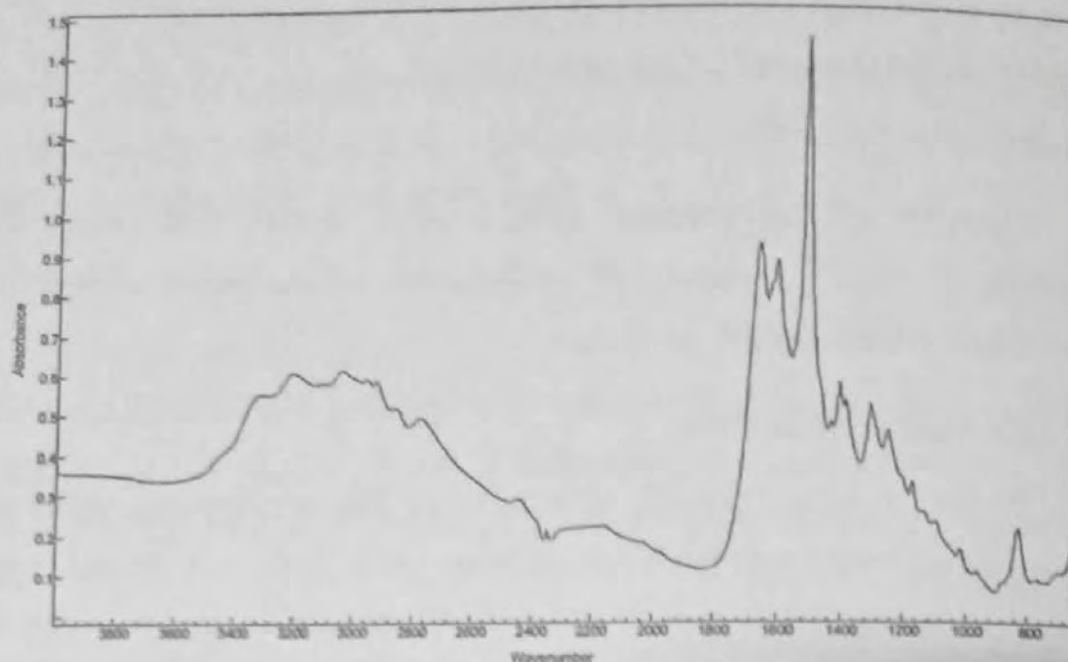


Fig. 1: IR spectrum of the conducting polymer- PVC blend

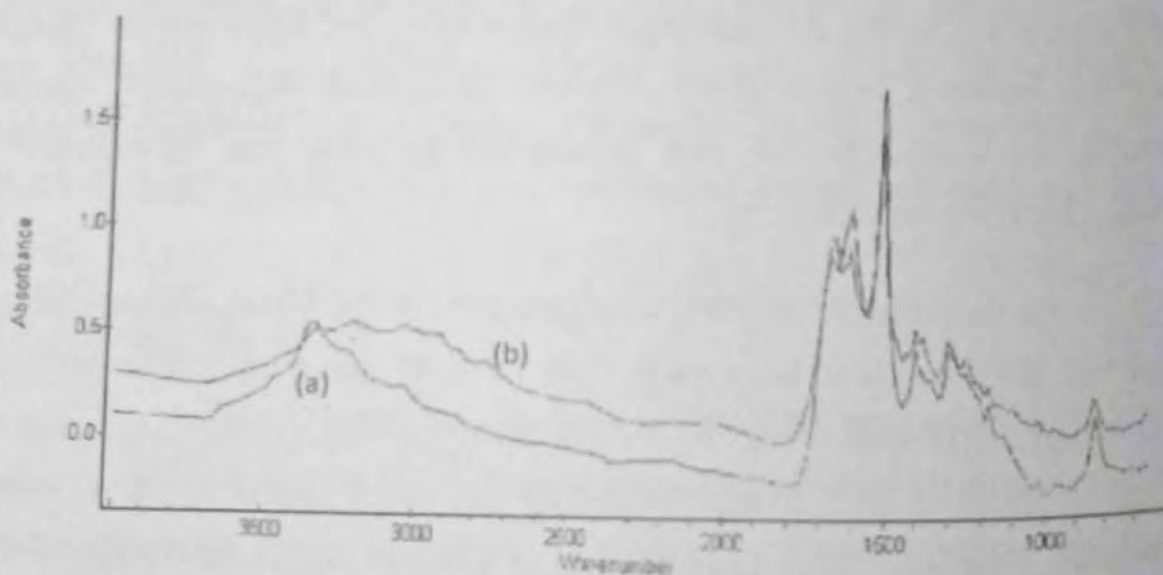


Fig. 2: IR spectra of (a) conducting polymer prepared in DMF and (b) its blend with PVC

Figures 3 and 4 show the IR spectra of the conducting polymer /PVC blends doped with HCl and HClO₄. The absorption peak at

3345 cm^{-1} in the undoped polymer was shifted to a broad band in the region of 3338 and 3360 cm^{-1} in HCl and HClO_4 doped samples respectively. The strong peak at 1628 cm^{-1} was characteristic of C=N bond in conjugated polymers. The bands at 1094 and 1084 cm^{-1} were due to the dopant molecules HCl and HClO_4 . The bands at 1512 and 1425 cm^{-1} showed the benzenoid and quinoid rings attached to N atom. Other bands were same in undoped and doped samples.

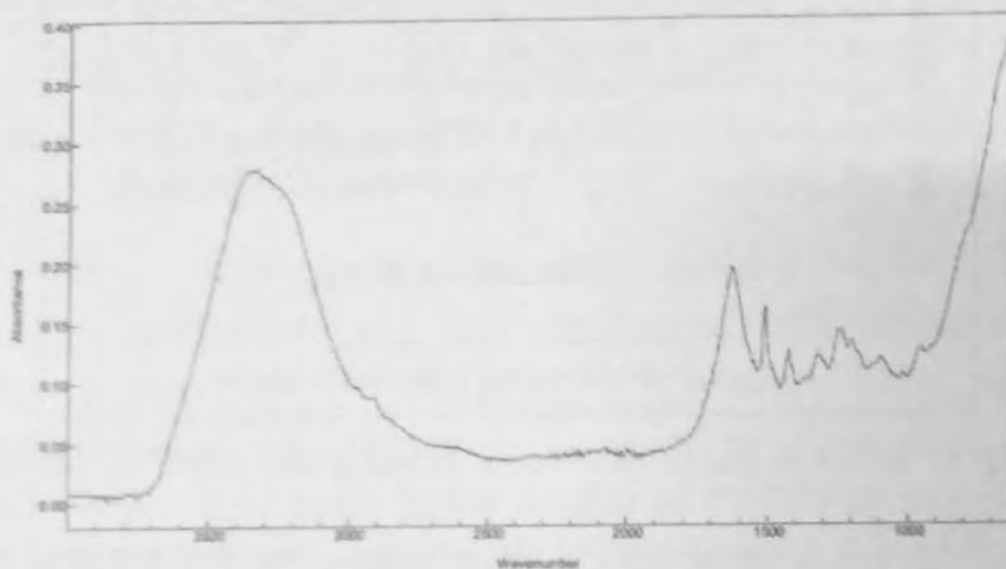


Fig. 3: IR spectrum of the conducting polymer/PVC blends doped with HCl

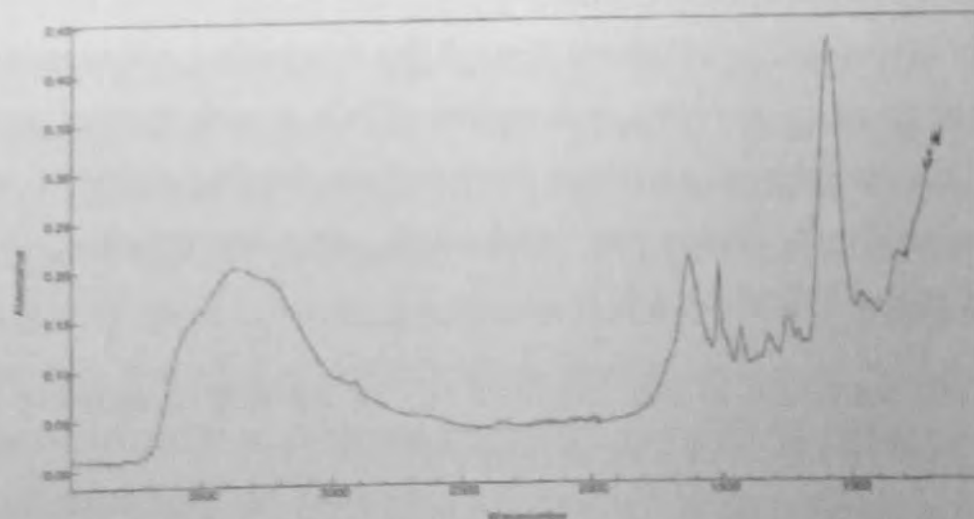


Fig. 4: IR spectrum of the conducting polymer/PVC blend doped with HClO_4

D.C. conductivity of the blends of the conducting polymer based on glyoxal, p-phenylene diamine and varying amounts of polyvinyl chloride is shown in the figure 5.

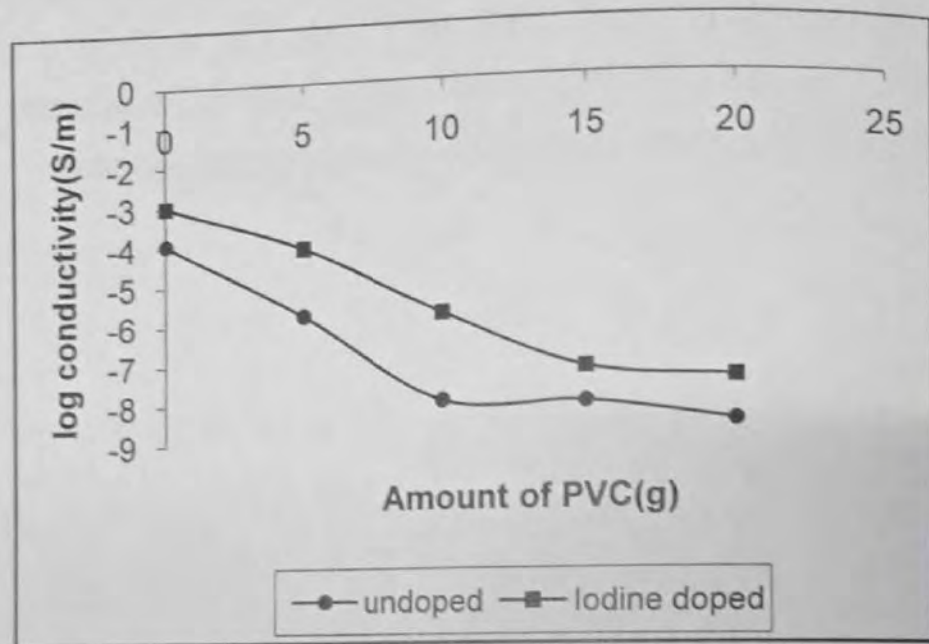


Fig. 5: D.C. Conductivity of the conducting polymer/PVC blends

The d.c. conductivity of the undoped blends decreased with increase in the amount of PVC. It was because, PVC is an insulator and the presence of nonconducting PVC in the composite prevented the free movement of electrons through the conducting polymer chain. Here, the conducting region was separated by a nonconducting region, so that the jumping of electrons from one conducting region to other became difficult. Hence the conductivity was decreased as in the case of polyethylene blends.

The variation in d.c. conductivity of the doped samples with the amount of PVC is given in figure 6.

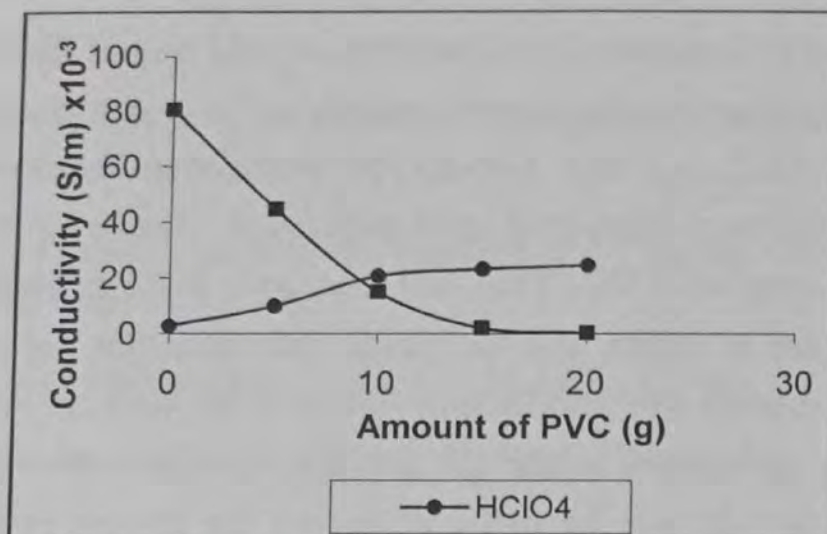


Fig.6: D.C. Conductivity of HCl and HClO₄ doped conducting polymer/PVC blends

The d.c. conductivity of the doped samples was more than that of the undoped samples. This was because, after doping, more charge carriers were introduced into the polymer chain, which helped to increase the conductivity. Conductivity of perchloric acid doped samples containing higher amount of PVC were more than that of other doped samples. HClO₄ was found to be the better doping agent because, of the large size of ClO₄⁻ counter ion, which helped to tightly attach the dopant to the polymer chain. Hence the removal of the dopant was difficult. This may be due to the attachment of H⁺ ions to the N atom of the polymer using the lone pair of electrons to increase the charge delocalization as it is clear from the IR spectra. Conductivity of the I₂ doped samples were lower than that of other samples doped with HCl and HClO₄. It may be due to the fact that charge delocalization due to iodine on the polymer chain was very low. Also, on drying the samples, the action of heat and vacuum may be removing the iodine easily, compared to acid dopants.

The d.c. conductivity of perchloric acid doped blends were more than that of the pure conducting polymer doped with perchloric acid. As the amount of PVC was increased, d.c. conductivity was increased and remained almost constant at higher amount of PVC. This was because, PVC present in the blend is polar in nature, and the charge delocalization and oxidation takes place with the conducting polymer as well as with PVC molecules as shown in the IR spectra. So the removal of the dopant molecule may be difficult during the drying process and since the charge carriers were not lost, the conductivity was higher for the blends. After a saturation point was reached, the increase in conductivity was negligible because, the amount of insulating region of PVC was increased in the blend.

Conclusions

- 1) The d.c. conductivity of the undoped conducting polymer blends was lower than the d.c. conductivity of the conducting polymer.
- 2) The d.c. conductivity of the undoped polymer blends was decreased with increase in the amount of PVC.
- 3) The d.c. conductivity of the conducting polymer blends was increased on doping with HCl, HClO₄ and iodine.
- 4) The d.c. conductivity of the blends of conducting polymer with PVC doped with HCl and iodine was decreased with increase in the amount of PVC, but it was increased on doping with HClO₄ and it remained constant at higher concentration of PVC.

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MAJOR FACTORS LEAD ELDERLY TO OLD AGE HOME

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ABSTRACT

Ancient Indian culture revered elderly and gave them high prestigious position. As a part of industrialization and westernization Indians forgot about their glorious culture and became blind follower of the same. Indians were unable to incorporate their culture to industrialization. Kerala is not an exception to this. Feminization in elderly is more prominent in Kerala. Elderly are considered as waste product by this culture as they have to contribute nothing to economy and put them in old age home. Objective of this study is major factors lead elderly to old age home. The study found out that change in economic structure creates crucial economic problems to elderly which act as the main catalyst to leading them to old age home. Economic problems cause breakage in family relationship which in turn leads to family problems. This acts second leading factor. When they are unable to occupy specified position in family, they are also expelled from society also. Hailing health, psychological problem and religious problem are other leading factors. Religious factors have not much to contribute in this. One of the most dangerous situations explored through this study is among young old have the most complicated economical problems than others.

Introduction

Our ears vibrated severely with spontaneously growing “greying population” and “Feminisation in ageing”. In this new era, society work hard to outnumber the elderly with old-age homes as a false part of social security. Of course there are kaleidoscopic changes occur in every moment. This is may be due to as an after effect of industrialization, individualization, modernization etc. These evolutionary changes moulded social being into an introverted isolated person. The glorious position of elderly false steeply. They are considered as waste element of the society and put into ‘Recycle bin’- “Old age home”. They can impart unavoidable role in society even in their later age. But in fast computerized life nobody have enough time to look after their parents and elders. It is very interesting to identify bounded factors lead them to old age home. For this we have to explore the major factors which lead them to old age home. It is their right to live happily and prestigiously in their later age as this is an age of harvesting. In this context descriptive method was undertaken to explore major factors lead them to old age home. Analysis was based on primary data collected through structured interview schedule. Samples were selected with random sampling method from three districts in Kerala.

As we progress into the twenty-first century, ageing has become increasingly recognised as an important issue facing individuals, families, communities and nations. Increasing age is related to long-term health conditions, higher rates of disability and poorer reported health status. Successful adaptation to this process depends on the interaction of a wide range of events. Population ageing could have profound implications for the economies as well

as societies experiencing a rapid increase in the share of older persons in the total population. However, ageing can also lead to the emergence of social welfare and gender-related issues. The combined effect of these changes could have an impact on economic growth and thereby the welfare of the people. These issues may pull them to old age home.

Many of the changes that occur from aging result from a gradual loss. These losses often begin in early adulthood, but thanks to the ability of our organs to adjust and maintain health, the actual loss is not experienced until it is fairly extensive. Interestingly enough, the majority of these changes are not seen until after age 70. The biggest difference in the rate of aging and organ efficiency lies in the presence of disease and/or the ability of the body to adapt to external stress. There is a wide variation among individuals in the rate of aging and, within the same person, different organ systems age at different rates. Old age is visualised as diminished physical and psychic activity and a plethora of problems. India is not exempted from this. Among Indian states, Kerala has the largest proportion of elderly population and the growth rate among the aged is increasing. Not only aged, but old age homes are also increasing.

Review of Literature

The process of reading, analyzing, evaluating, and summarizing scholarly materials about a specific topic is the review of literature. **Rahul DevBhaswar** in his paper "Population Ageing in India: Demographic and Health Dimentions" presents demographic and health dimensions of ageing population (60 plus) in India and its

major states. Decreased fertility rate and increased life expectancy leads to demographic transition. Asia will have the majority of world's elderly population by the turn of the 20th century. Various indicators such as changes in age structure, sex ratio, rural-urban residence, marital status, support ratio and causes of deaths among the elderly were analyzed for different census years and discussed in detail. According to him population starts ageing in two ways- "bottom-up" and "top-down". Bottom-up ageing is due to decline in fertility and top-down is due to decline in mortality. Kerala Goa and Haryana are the three states which have the largest proportion of elderly women in India. He states that the feminization of elderly population is very clear. His study shows that the process of population ageing has already started in India. With the decline in fertility and mortality levels, the size of the younger population is shrinking, leading to the ageing of the population. Trend in sex ratios and greater life expectancy of females indicate that feminization of elderly population of non-working age relative to the working age in all the states. His study reveals that Kerala will witness population ageing sooner than other states. Expenses of caring for old and frail relatives with multiple, chronic disabilities and illness is increasing the load for working class. Governmental, non-governmental agencies along with families would require providing the care and support for the increasing number of elderly persons (Bhaswar, 2001).

Satadru Haldar, in his paper, 'Management of health and health related problems of the tribal aged', analyses elderly health and its relation to the social well being. They are vulnerable due to decrease in failing health. Ordinarily the members of their family

are supposed to take care of them. The effect of individualism and fast deterioration of family leads old people to seek the assistance from state. We assumed that the family would take care of their own aged. But even in the villages, there are old people who have become destitute. In modern times many changes have taken place and individualistic as well as competitive life has intruded. The major health problems of elderly are malaria, Muscular pain, Stomach pain, Respiratory problems like Asthma, eye complaints, T.B., Blood pressure, Arthritis, Paralysis etc. Female suffer more than males in visual disability. This happens due to nutritional deficiency in general and Vitamin A deficiency in particular. Elderly females are more prone or willing to accept their way of life in a positive emotional framework. Self assessed health status is an important indicator of quality life during old age. Health condition and economic condition seems to have no relationship with one another as both rich and poor enjoy similar health conditions. Many elderly people find it difficult or impossible to manage such activities as walking outside, bathing washing wearing garments, getting around the house getting in and out of bed and so on. For this they need help from family or nearby kin's. This paper gives the main factors that lead elderly to old age home (Halder, 2006).

Vijay Prakash Sharma, in his paper, 'Tribal Aging in Jharkhand Health Perspective' analyzed elderly in traditional region. The old have traditionally been honored and respected. Those who neglected their old parents earned social disrespect and were ridiculed. Govt. of Jharkhand in its new health policy-2004 has announced that provisions for care of aged will be made. In 2002-03 Govt. Of Jharkhand reported construction of two old age homes for

elderly. This gave an idea about the involvement of state for the well being of old (Sharma, 2006).

In the article, 'Ageism in Kerala' by **Dr. K. G. Moli** after effect of ageism in Kerala analyzed. According to the author, among the Indian states, Kerala has the largest proportion of elderly population and the growth rate among the aged is increasing higher and higher. Therefore one of the many challenges- facing Kerala is its growing elderly population. The marital status of the older persons is an aspect of family structure that deeply affects their living arrangements, support systems and individual well-being. It also determines the living arrangements of older persons. They constitute a multiple support system for spouses in terms of emotional, financial and social exchanges. In Kerala majority of the elderly females are widows. Among the elders (60+) in 1981, 66% of the women had lost their husbands whereas only 12% of the men lost their wives. Therefore elder women of Kerala are doubly marginalized due to the combined effects of ageing and widowhood. Widowhood is the main factor that influences one's adjustment and mental health. Due to the breakdown of the joint family system, selfishness, lack of adjustment, refusal to compromise and with younger women entering into jobs, the case and attention give to the elderly persons are affected. Majority of the female elderly especially of the rural area are living in poor economic background with no money at their disposal to meet their daily life. This paper gave us information about the leading factors to old age home (Moli, 2004). From these, we can understand elderly female folk exploited greatly. Several gaps are existed within these studies. So a deep research is needed to overcome this.

However, an ongoing criticism of the social scientific study of ageing is that it lacks "theoretical rigor" and tend towards the descriptive. Thus research on ageing being primarily problem-driven rather than theory-driven. Kerala's elderly female folk are heterogeneous group. Major factors lead elderly to old age homes are different. We have to find out those factors which lead them to old age home.

Methodology

In Kerala as per 2001 census, the percentage of 60+ was 10.48 and it is 11.7 per cent in 2011 and is projected to be 15.6 per cent in 2021. The elderly women represent the fastest growing age group in the population of Kerala. The threat of population ageing is more severe in Kerala than the rest of the country. Gender dimension of ageing is very significant in Kerala and female population predominates at all the stages of older ages. Population ageing could have profound implication for the economies as well as the societies. Thus the dependency ratio is greater.

A large number of elderly females are in the status of widowhood, illiterates, non-working and belong to lower and or no income brackets. All these finding leads to the conclusion that the aged females are the vulnerable within vulnerable. Their miserable status makes them to appear more aged than actually what they are. 'World Health Organisation Report 'states that the percentage of the aged women who are 60+is going to be doubled within two decades. But so far no specific study has been done to elevate their status. There will be lesser and lesser people taking care of the elderly as the decades roll by. Traditional life guards of family care

are dwindling due to industrialization, our migration, dual career, female job participation and growing consumerism. All these make the well-being of the elderly, a growing challenge of the 21st century. A significant aspect of challenge comprises the depressed elderly along with society who are unwilling to accept them.

An overview of available studies revealed the fact that the majority of researches concentrated on the problems faced by the elderly women. A study based on the **Major Factors Lead elderly to Old Age Home** has not been done. So the present study” is undertaken with a view to explore information to fill the existing research gap. It is hoped that such a study would be helpful to the policy makers and society.

The scope of study is limited to the elderly women (60 years and above) residing in Kerala. The study on factors which lead them to old age home was being primarily problem-driven. Kerala elderly womankind is a heterogeneous group. They have to face a lot of problems during their existence. So this analysis is based on these problems. A single theory cannot explain all these problems. Various factors deeply intertwined to each of it. Descriptive research design has been adopted for this study. The purpose of this research design is to explore the factors which lead elderly women to old age home and elicit new information about the elderly women residing in old age homes in Kerala.

The objective of this study is to find out major factors lead elderly to old age home. The design uses primary and secondary data. The primary data about the elderly for the study have been collected through structured interview schedule among elderly

women in Kerala. The secondary data are derived from books, journals, reports, newspapers and online media on the subject. 150 samples selected from old age home, Kerala are considered as samples by Simple Random Sampling. Out of 150 samples, 50 samples from Thiruvananthapuram, 50 from Kozhikode and 50 from Thrissur old age home. Data collected through structured interview schedule were analysed with SPSS.

Discussions and Analysis

Table 1: Major Factors lead elderly to old age home

Major leading factors	Number	Total	Per cent
Economical factors	147	150	98
Family factors	144	150	96
Social factors	105	150	70
Health factors	41	150	27
Psychological factors	41	150	27
Religious factors	10	150	7

The above table deals with the major factors which lead elderly to old age home. Researcher finds that 98 percentages of them entered to old age home by their serious economical factors. 96 percentages of the members have family and because of this problem, they lead to Old Age Home. 70 percentages of the members by social factors. Only 27 percentage members have health and psychological factors. One interesting thing noticed here that 7 percentages of the members have religious factors. But the study proved that religion and religious faith is not considered as a great leading factor for them to Old Age Home.

Researcher concluded that vulnerability among the elderly explained by earlier studies proved by the above table. According to several studies in Kerala, around 50 per cent of elderly have some personal income. But the present study disagrees with it. In most of the cases, income earned by elderly is not sufficient to fulfil their daily needs. Thus economic problems become most serious factors for elderly which makes their way to old age home. In this industrialised individualised new millennium family relationship undergoes several changes which lead to breaking up of family relationship. This doubled problems of elderly which lead their way to old age home. Human being is a social animal. So in the process of ageing has an unavoidable role in the process of ageing. Above table indicates the importance of social alienation which makes their life unbearable. Compared to these factors, health and psychological factors are very meagre but significant. Religious factors are not in a considerable amount leading them to old Age Home.

Here economic factors of elderly based on age, education, income, marital status etc. are analysed.

Table 2: Age and Economic factors leading to old age home

Age	Economic factors			Total
	Low	Medium	High	
60-69			38 56 ¹⁰⁰	56
70-79	50 1 ^{1.5}	100 1 ^{1.5}	44 64 ⁹⁷	66
>80	50 1 ⁴		18 27 ⁹⁶	28
Total	2	1	147	150

The above table shows that how age with economic factors are related and push them to institutions. Majority elders especially

younger age group enter into institutions, due to economic problems as their major factor compare to senior elderly. Among middle old, 1.5 per cent have low level economic problems for this and 1.5 per cent medium economic factor and 97 per cent have high level economic problems and it push them to institutions. Among oldest old, 4 per cent have low level problems and 96 per cent high level problems. Among members have low economic problems, 50 per cent belong to middle old and 50 per cent oldest old. Among medium category 100 per cent belong to middle old. Among high problem category 38 percent belong to young old, 44 percent medium old and 18 percent oldest old. The study found out that among the youngsters, majority pushed into Old Age Home due to their high economic problems and compare to seniors, youngsters' number is very high. That is, younger age group elderly enter in to institutions because of high economic problems than seniors.

From this researcher pointed out that as the age decreases the problem become more severe in old age home. This indicates the new trend of industrialisation and individualisation percolates to the grass root level. In coming years these trend may increase more prominently. Modernization and westernization put elderly in more complicated condition. Society is facing tremendous changes in economic structure. Elderly female folk are the most negatively influenced by this. They are desperately deteriorated due to this. This tendency unpredictably increased in future also if we didn't take necessary steps to stop this nature.

Table 3: Religion and Economic factors leading to old age home

Religion	Economic factors			Total
	Low	Medium	High	
Hindu			43 63 ¹⁰⁰	63
Muslim			27 40 ¹⁰⁰	40
Christians	100 2 ⁴	100 1 ²	30 44 ⁹⁴	47
Total	2	1	147	150

In the above table religion and economic problems are analysed. The study pointed out that all Hindus and all Muslims enter into Old Age Home because of high economic problems. Among high problem holders 43 per cent belong to Hindus, 27 per cent belong to Muslims and 30 per cent belong to Christians. Among Christians only 4 per cent belong to low problem category and 2 per cent to middle category. The analysis found out that religion not considered as a factor for pushing them to institutions. One interesting point noticed here that among the all religions, elderly pushed into institutions due to high economic problems than any other factor. That is, religion is not an influencing factor for enter into institutions.

From this it is concluded that any particular religion alone can't load the sin of economic problem. There is any strong tie up of religion and economic problems cannot see. Religious activities not much related to economic activities. In India, for centuries, women have been pushed aside from the path of development in the name of customs, tradition and religion. Lack of progress is due to low public awareness of gender issues, strong traditional practices and values, the caste system and religion- but more because of lack of cooperation from key stakeholders (Ghosh, Ray and Chande, 2002).

Table 4: Caste and Economic factors leading to old age home

Caste	Economic factors			Total
	Low	Medium	High	
General	100 ² 2	100 1 ¹	76 112 ⁹⁷	115
SC			10 15 ¹⁰⁰	15
OBC			14 20 ¹⁰⁰	20
Total	2	1	147	150

In the above table caste and economic problems are analysed. Almost all members except 3 per cent belong to high economical problems group, which lead them to old age home. Out of 150, 2 respondents belong to low level problems group and 1 per cent has medium level problems. One interesting thing noticed here that among the SC and OBC elderly, cent percentage of them enter into Old Age Home because of high economic factors.

From the table, inferred that we cannot blame against a single caste for the pity condition faced by elderly. Several articles call elderly as vulnerable within the vulnerable. This table also verify the same. Age old traditions have a strong bond on its members. This study gives an indication to the breakage of this bondage. Caste exerted tight constraints on women. This control involved two major aspects. One was women's disinheritance from immovable property in the form of land, and their exclusion from the productive economy involving removal from public life to the domestic sphere. The second was the far greater control exercised by men over women's sexuality, imparted through the new law books known as the Smritis. (Gupta, 2001).

Table 5: Education and economic problems leading to old age home

Education	Economic factors			Total
	Low	Medium	High	
Illiterate			33 49 ¹⁰⁰	49
Primary	50 1 ¹		61 89 ⁹⁹	90
Secondary			6 9 ¹⁰⁰	9
Degree	50 1 ¹⁰⁰			1
>Degree		100 1 ¹⁰⁰		1
Total	2	1	147	150

Education and economic problems analysed here and it indicated that both between a inverse relationship. Among high level economic problem holders 33 per cent are illiterate and 61 per cent have primary level education. Only 6 per cent have secondary level education. Among primary levels, 1 per cent has low level problems. 100 per cent degree holders have low level problems, at the same time 100 per cent of the above degree levels have medium problems lead them to institutions.

Researcher points out that educational qualification of the respondents have much importance for leading them to Institution. Our society is a patriarchal type. In this society, women are participating only in supporting jobs which do not pay much. Earlier studies argue that female headed families face huge amount of economical problems. Most of them lie below poverty line. This is proven true through this table. Earlier studies indicate that Kerala female folk unfortunately unable to transfer their educational qualification to increase their economical level.

Table 6: Marital status and Economic factors leading to old age home

Marital status	Economic factors			Total
	Low	Medium	High	
Married			2 3 100	
Widow	50 1 1	100 1 1	67 98 98	3
Separated			4 6 100	100
Unmarried	50 1 2		27 40 98	6
Total	2	1	147	41
				150

Marital status and economic factors are analysed in above the table. Only among widows 1 per cent lies in low level problem holders and 1 per cent in medium levels. Among unmarried members only 2 per cent lie in low level problem holders and 98 per cent lie in the high level problem holders. 100 per cent separated members have high level problems lead them to institutions. Among the married elderly, 100 percentage enter into institution due to high level economic problems. Among low level problem holders 50 per cent lie under widow category and 50 per cent under unmarried sector. The study found out that widows and unmarried number is very high compare to married. That is, our family system give a chance to live in family to married women.

Through this study, researcher point out that in old age home most of them are unmarried and widows. These two elderly category are not fit to live in society and family. Our family system not supported both. Marital status have very significant role in our society. This is not valuable in this particular atmosphere to eliminate status has nothing to do in this particular atmosphere to eliminate them from economic problems. Through this age related marital

status explained. Marital status and economic problems are closely related. The increased number of widow in old age home gives the importance of marital status.

Table 7: Region and Economic factors leading to old age home

Region	Economic factors			Total
	Low	Medium	High	
Rural	100 2 ¹		95 140 ⁹⁹	142
Urban		100 1 ¹³	5 7 ⁸⁷	8
Total	2	1	147	150

Region and economic problems are analysed in the above table. Among the 150 respondents, 140 of them from rural and only 8 from urban area. Among rural elderly 1 per cent come to institution because of low level economic problem and 99 per cent come under in high problem category. Under urban category 87 per cent come to institution by economic problem factor as high 1 and 13 per cent by medium level category.

Researcher points out that rural elderly enter into old age home by complicated economic factors. Earlier studies indicate that rural elderly have more complicated problems than their counterparts residing in urban area. This study also confirms the same. Upon losing their traditional moorings, they seek support and justification in the modern sector of urban society, yet quickly become victims of a consumer oriented world in which everything is commoditised, bought and sold. In this amoral and irreligious realm of society, men have become more powerful than ever before, assuming greater rights of action (Pandey, 2009). Women's access

to land ownership is extremely limited. The majority of rural women depend on agriculture which is major unorganized sector in India. The lack of facilities to acquire skills and unavailability of opportunities to enter other fields has made them desperate and depressed (Subramanyam, 2010). This gives an indication of importance of region in economy. So researcher analysed the importance of region in economic factors of elderly to institution.

Table 8: Income and Economic factors leading to old age home

Income	E Economic factors						Total	
	Low		Medium		High			
Nil					98	144	100	144
<500					1.4	2	100	2
500-1000					0.6	1	100	1
1000-2000	50	1	100					1
>2000	50	1	50	100	1	50		2
Total		2		1		147		150

The table shows that there is an inverse relationship between Income and economic factors. One interesting thing noticed here that the three groups of income (nil, <500 and 500-1000) respondents revealed due to their high economic problems, enter into institutions. Among high level problem holders, 98 per cent belong to the elderly do not have any income. 1.4 per cent have income less than rupees 500 only and 0.6 per cent have income rupees 500-1000. Among medium levels have income above rupees 2000. Among low levels problem holders 50 per cent have income rupees 1000-2000. Remaining 50 per cent belong to the category have income greater than rupees 2000.

Researcher points out that surely income has significant role to remedy their economical problems. Majority of the elderly belong to the no income class, due to the absence of income, they have complicated economical problems and these economic problems are considered as the major factor to push them to institutions. Very few have income which not sufficient for their daily living. That group also dipped into Old Age Home. Earlier recorded data's are proven through this. According to United Nations Report, women constitute half of the world's population perform nearly two-third of work hours, receive one tenth of the worlds income and own less than one hundred per cent of the world's property. The low value for female life is the biggest problem (Khan, 2010).

Conclusion

Ageing population and feminisation among elderly are major problems have to face by society and sociologists. Ageing process is the outcome of advancement in scientific knowledge. But the human being fails to incorporate these advances to society's well being. Otherwise society fails to give enough places for elderly in the natural world. Society alienated elderly and put them in recycle bin- "old age home". Industrialization and westernization lead people to individualization. Individualization devaluate our old ethics. Our revered elderly desperately deteriorated. Objective of this study is major factors lead elderly to old age home. The design uses primary and secondary data. The primary data about the elderly for the study have been collected through structured interview schedule among elderly women in Kerala. The secondary data are derived from books, journals, reports, newspapers and online media on the subject.

150 samples selected from old age homes in Kerala with the help of Simple Random Sampling. Out of 150 samples, 50 samples from Thiruvananthapuram, 50 from Kozhikode and 50 from Thrissur old age homes. Data collected through structured interview schedule were analysed with SPSS.

Major findings of this study are

- 1) The present study found out that economic and family problems considered as the major factors to push them to institutions.
- 2) The study found out that among the youngsters, majority pushed into Old Age Home due to their high economic problems and compare to seniors, youngsters' number is very high. That is, younger age group elderly enter in to institutions because of high economic problems than seniors.
- 3) The analysis found out that religion is not considered as a factor for pushing them to institutions. One interesting point noticed here that among the all religions, elderly pushed into institutions due to high economic problems than any other factor. That is, religion is not an influencing factor for enter into institutions.
- 4) Researcher found out that we cannot blame against a single caste for the pity condition faced by elderly. One interesting thing noticed here that among the SC and OBC elderly, cent percentage of them enter into Old Age Home because of high economic factors. Several articles call elderly as vulnerable within the vulnerable. Age old traditions have a strong bond on

its members. This study gives an indication to the breakage of this bondage.

- 5) The study found out that there is an inverse relationship between education and economic problems, which pushed them to institutions. Among the educated elderly nobody have economic problems and this economic problem compel them to institutions. Our society is a patriarchal type. In this society, women are participating only in supporting jobs which do not pay much. Earlier studies argue that female headed families face huge amount of economical problems. Most of them lie below poverty line. This is proven true through this study. Earlier studies indicated that Kerala female folk unfortunately unable to transfer their educational qualification to increase their economical level.
- 6) The study found out that widows and unmarried number is very high compare to married enter into institutions by economic factor. That is, our family system give a chance to married women, live in family. Marital status have very significant role in our society.
- 7) Researcher points out that the rate of the rural elderly residing in old age home is very high compare to urban elderly. That is, study found out that rural old people enter into institutions due to their economic factors than urban elderly. Earlier studies indicated that rural elderly have more complicated economic problems than their counter parts residing in urban area. This study also confirms the same. Upon losing their traditional moorings, they seek support and justification in the

modern sector of urban society, yet quickly become victims of a consumer oriented world in which everything is commoditised, bought and sold. In this amoral realm of rural society, men have become more powerful than ever before.

- 8) The study found out that there is an inverse relationship between Income and economic factors. Researcher points out that surely income has significant role to remedy their economical problems. Majority of the elderly belong to the no income class, due to the absence of income, they have complicated economical problems and these economic problems are considered as the major factor to push them to institutions. Very few have income which not sufficient for their daily living. That group also dipped into Old Age Home.
- 9) Researcher points out that surely income has significant role to remedy their economical problems. Majority of the elderly belong to the no income class. Due to the absence of income they have complicated economical problems. Very few have income which not sufficient for their daily living. Earlier recorded data's are proven through this. This indicates the seriousness of the problem.

Suggestions

- 1) Make awareness among elderly and society about their significant role have to play in old age.
- 2) Take necessary steps to increase their economical status.
- 3) Make our family bonds more strong enough to protect our elderly.

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REPRESENTATION OF THE OTHER: MIGRANT WOES IN BENYAMIN'S *GOAT DAYS*

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Migration is a dream that many cherish in Third World countries like India. The luring tales of affluence, comfort, attractive salary packages or a desperate need to survive hostile depressing conditions take many to alien lands thousands of miles away from the land of their origin. Departure through necessity or for higher standards of living even at an irrevocable loss of familial and cultural sense of belonging happens on day-to-day basis. The plunging into the unknown is certainly a risk of extreme optimism for a brightened tomorrow.

The phenomenon of migration is on an all time high in the recent times triggered by positive and negative forces leading to the creation of reconstituted nation states. The global and the local merge resulting in the production of altered identities. Technological advancement has accelerated the process thereby blurring borders that have become permeable. Wars, political crisis, terrorism and violence, ethnic cleansing and journeying for fulfillment of dreams have deterritorialized people leading to different degrees of migrant intensity. The term 'migrant' incorporates into it concepts of exile, explorer, adventure seeker, refugee, expatriate and the like. Iain Chambers writes that migrancy "involves a movement in which neither the points of departure nor those of arrival are immutable or certain. It calls for a dwelling in

language, in histories, in identities that are constantly subject to mutation” (5).

Benyamin’s *Goat Days* is the saga of survival of a migrant. Migration for Najeeb the protagonist was triggered by the humble desire of fulfillment of the immediate “usual cravings of most Malayalis” (Benyamin 35). His life as a sand miner could not bring in the little luxuries he yearned for. It was by chance a friend of his from Karuvatta offered him a visa to Saudi Arabia.

Pleasant prospects in a distant land have lured many unwittingly into a life of slavery, indentured labour and physical abuse. The risk of getting victimized is high among migrant unskilled labourers as their security shield is thin coupled by ignorance and poverty. The craving for the better yields to the possible risks and worries associated with the movement to an alien land. Though Najeeb was full of worries about the ‘city of his dreams’ where he was bound to, he couldn’t foresee the possible dangers or difficulties he might face abroad. As a wanton firefly to fire, he was lured by the oft heard tales of affluence in Riyadh. Sainu his wife echoes the sentiments of all migrants-to-be when she describes it as “a land where everything is available in plenty” (41). Braving all hassles, he ‘fixed up’ the required amount to cover all expenses. It was a comforting thought to him to have a Malayali as fellow traveller to work in the same company.

Labour migration very often is considered a personal decision but in Kerala it is part of a global migrant labour culture. The social and political system here encourages migration. Unfortunately, it is not realized that a pool of cheap labour is being exported to meet

the demands of overseas markets. This trend has been catching on for some time that today there are labourers migrated even to the most impoverished nations in Africa. Today there are about 200 million migrants from different countries across the globe. The risks migrants take range from workplace racist comments to death. But the strongly held belief that one who leaves home provides better propels large waves of migration. The money migrants send home, 'the remittances,' serve public good and many economists view this as a solution to global poverty.

Like any global labour migrant community, Keralite migrants form a floating labour that can be exploited and victimized in the adapted country. Trapped as cheap labour, migrants are pitted against another in the name of various othering factors like nationality, ethnicity, culture and religion.

Normally migration breeds utopian stories of success and affluence. Benyamin through his novel demystifies the hallow surrounding such stories. *Goat Days* is based on the account of a hapless soul who had to undergo the cruelties of slavery in the Arabian Desert. The reality of migrant life that he personally saw in the Gulf where he lived for more than 20 years compelled him "to tell tales of the many who lead a life of suffering and pain...For me it was really shocking to know that slavery is still in existence at certain areas" ("*Goat Days*. Trafficked and Enslaved").

Many are not aware of the slave- like work conditions that a few hapless migrants are forced into. In a world of globalized free-market enterprise slave- holders can easily cover up their ignominious acts of violence and treachery. The ulterior motive of profit making,

even at the cost of human life, drives them to suppress even a feeble of voice of protest. Unfortunately in many instances, the enforcers of law, the politicians and the military collude with the slavers or are partners in the crime.

Najeeb as a migrant-to-be had heard of the Gulf as the land of gold and fortune. The airport of Riyadh signified a wonderland to him. The journey from the airport to his place of work along with his 'arbab' - the custodian of his dreams- was horrendous enough that it became a crossing from one world to another. His first encounter with the employer was a rough deal. The severe stink and the dirty and smelly clothes of the arbab came as a rude shock. An unknown fear gripped him which soon aggravated into a nightmare of mental and physical pain. His naïve belief in the goodwill of the employer and hopes for a comfortable work environment vanished when Hakeem was forced into a 'masara' or goat fence in the darkness of the night. His defiant spirit protested against this separation from Hakeem. The arbab's blood- curdling swinging of his belt cowed him and thus initiated his life into slavery, torture, brutality and untold violence.

Goat Days as a narrative offers an irrefutable testimony to the totalized exploitation of an enslaved life. Najeeb's adaptation to this new identity of a slave migrant wavered between defiance, resistance and mostly subservience. Defiance was rarely possible because the double- barreled gun and the binoculars posed a constant threat. He was always under surveillance even when he went out with the goats. Whenever he attempted to flee, the master would be near his side. The arbab showed not even a remote possibility of hospitality to his

employed. The very question of hospitality concerning “one’s dwelling place, one’s identity, one’s space and one’s limits” gets thwarted and refutes notions of an “embrace, even a celebration, of difference as well as of a common humanity” (Still 49). Najeeb’s bitter experience on the first day itself was the denial of water to wash his backside after the call of nature. He had to go on a ban on sanitation or else he risked being hit mercilessly with the belt. The ‘unbecoming’ of himself started and he was forced to break all his habits. He led the life of a goat shepherd and never removed the unwashed *thobe* that he started wearing on the first day.

Lucy Irigaray’s essay “Animal Compassion” highlights the rarity of animal kindness in the human world and the many signs of compassion we receive from them. The goats and sheep in the masara showered affection on Najeeb in their own animal ways. Escaping traumatic conditions require a great will to survive. Enduring a misery with no one to share can drive anyone crazy. Najeeb had none in the masara to pour out his sorrows. Unshared emotions pulsed and frothed at his mouth. The absence of a fellow being created vacuum that, his mind automatically found a vent in the goats. His animal friends filled the void within and they easily wander into his space and brought him help in their own way. As Irigaray maintains “The comfort lavished by animals ... is as timely as grace” (201). Animals return kindness shown to them and they are filled with a kind of pity that simply helps and don’t drag humans to obligation. He named the goats “not only looking at their faces but also relating their names to some character traits, their gait, the sounds they made, by incidents they remind (him) of them” (Benyamin 101).

Najeeb escaped from his consuming loneliness through the stories he narrated to his goats. Pouring out his agony, dreams and bitterness brought him a big relief. The goats would listen and shed tears as if they understood everything. The sheep also gave him protection from the excruciating cold of winter. Najeeb would go to the masara and lie embracing the sheep. That was his transformation as a sheep among the sheep. He shared not just his sorrows and pains with the goats but also his body.

One night, as I lay down, I could not sleep. I didn't know why, but I was covered in sweat. I had an insatiable desire a passion building up inside me like a desert storm. For sometime, I had been impotent. I didn't think that I would have the urge to be sexually active again. But it happened. What had lain dormant for so long suddenly woke up. All my efforts to satiate it only made me crave more. Seductive nude female figures began to slither in front of my eyes. I thawed in that emotional surge. I needed a body to lie close to. I needed a cave to run to. I became mad. In the intensity of madness, I got up and rushed out. When I opened my tired eyes in the morning, I was in the masara. With Pochakkari Ramani lying close to me (168).

The othering process as a complete 'non-human' is the lot of many migrant turned slaves. The migrant other materializes in a process of differentiation based on geographical, racial, cultural and economic positions taken up. Social, cultural and psychological rootlessness lead to distress and alienation in migrants. Living between two worlds, unable to integrate with the present or extricate from the loss of the past describes a postmodern condition.

Handlin wrote that the history of immigration is a history of alienation and its consequences (4). The migrant lacked the power to change or influence the present. Trapped in a world devoid of all rules and norms of complete acceptance, integration with the host society proved difficult. Displacement, isolation, helplessness, desperation, separation from home and familiar surroundings all contribute to the becoming of a foreigner, a stranger in every sense. Desperation drove Najeeb to the only refuge i.e., God and he saw Allah in the burning sun of the desert. "Like a prophet in the desert I would kneel on the hot sand and pray looking at the sky: My Allah, release me from this affliction. Send me a saviour as you sent Moses to the Israelites. Liberate me from this captivity" (152). His belief that Allah was looking after him instilled in him a new confidence. "Prayers were my bolt-hole. It was because of faith alone that I could be strong in spirit even when I was weak in body. Otherwise I would have withered and burnt like grass in that blazing wind" (153). In order to free himself from a shattering alienation he tried to find meaning in the present. There was no use being bound to thoughts of the past. "They only delay the process of realization and there is no going back...I am condemned to the conditions of this world" (95). Najeeb tried to identify himself with the present - a strategy that helped him survive from his drowning sorrows and killing anxieties.

Migrants are prisoners of two worlds - the lost past and the estranged present which blurs the possibility of a better future. Being in a hostile world there is a constant craving for the old. Nostalgia sometimes overpowered Najeeb and the thoughts of his dear ones tormented him. One day he developed a craving to write a letter to Sainu though it was a meaningless exercise. He couldn't

pull himself up to write the truth of his miserable existence. The truth was not in the letter but in his tears. Najeeb also experienced moments of complete resignation to his fate. For some time he never thought that, he would escape from the hell he was in. "I carried on living with no hopes of escape. The dead don't dream about life" (172). With just the animals and his arbab in the masara, Najeeb felt he was living on an alien planet. The monotony of life was broken by the periodic visits of water, hay trucks and wheat trailer. His heart would flutter to see the drivers who were mainly Pakistanis or Pathans. He hoped he would get a chance to speak and plead to save him. But all his attempts were in vain.

Slavery based on migrant labour or otherwise is a booming business and the number of slaves is increasing in the present global economy. Today there are just slave holders and not slave owners. This exempts the employers from all responsibility but with absolute control over what they own. "When they have finished with their slaves, they just throw these people away. This new slavery focuses on big profits and cheap lives... People become completely disposable tools for making money" (Bales 4). Putting migrant labourers into slavery is not a horror consigned to the past. Najeeb was not the first victim of his arbab. The scary figure that he saw on the first three days at the masara had come before him. His escape had given hopes of escape. But later when he accidentally came across the rotting body of the scary figure in the desert, he knew his arbab wouldn't hesitate to kill an absconder.

The prospect of a homecoming was almost impossible for Najeeb who was confined to the filth of the masara. His unflinching

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faith in Providence and the final escape from there is a journey of a migrant slave to a refugee or an undocumented migrant waiting for deportation.

Migrant labourers who escape torture and abuse at work places, find refuge in embassies, detention centres or are put in prison. The narrative of migrant victims pours insight into the criminology of 'mobility'. Several mechanisms in place that objectifies migrants and detainees in turn serve belligerent national interests. Completely at the mercy of the state or the government, the migrant waits endlessly for the return. In some cases, return is not an option but fair justice to continue as a foreign national. One way of objectification of migrants is to treat them as a homogenous group rather than people with individual characteristics. Migrants often get conflated with criminals and law breakers and are reduced to mere living objects meant to be deported. Foreigner national prisoners are considered a major threat despite their vulnerable situation and there is little empathy shown to migrant victims. The undocumented or irregular migrants lose all individuality. "When applied to foreigners in detention, Giorgio Agamben's much cited notion of 'bare life' describes a political state, but suggests an empty monochrome existence characterized by misery, lack of self-determination and irrelevance. In Agamben's formulation, detainees are without rights and have relevance to the system of justice only in so far as it relates to the process of exclusion" (Aas 11).

Benyamin's novel offers insights into the dynamics of migration and the human cost it entails. For Najeeb, the Sumesi jail was a temporary place of refuge but still living between worlds, "caught on a

frontier that runs through your tongue...dress, appearance and life” (Chambers 6). He remains a stranger in the host country waiting endlessly for the much awaited documents that would bring him back to the safety of his homeland. Many of his fellow prisoners were like him waiting for deportation to escape the brutality of their employers. The state had no mechanism to look into the well-being of migrant labourers. “The Arabs could execute the law of the land. The Arab enjoyed more freedom inside a prison in his country than a migrant outside in a foreign land” (22). On parade days, Arab employers could take back their absconding workers sealing their fate forever. The heart rending pleas and cries heard within prison walls on the sight of Arab employers is proof of the uncontrolled exploitation of migrant labourers that prevailed in the Arab world.

The onus of survival among migrant labourers rested upon the migrants themselves. The labour recruitment system in the Gulf held no responsibility towards protecting the interests of the migrant labourers. Those laws framed in GCC (Gulf Co- operative Council) countries were placed or acted for the favour of employers. However there was a silver lining in the cloud when the Indian government signed a pact with the Saudi counterparts in early 2014 which defines some rights and responsibilities of both employers and employees who are domestic workers.

Benyamin admits that though he himself was a migrant who worked for a long period in the Gulf, he had no idea that slavery was still in existence at certain areas. He reiterates that his novel is but one story. “There are so many ‘one column news items’ which we read regularly: ‘found a missing man in desert after a long

period' or 'a man who forgot his language' or 'a man with undecipherable...' The real human stories get buried" ("*Goat Days. Trafficked and Enslaved*"). Benjamin speaks of and for the silent invisible workers abroad who remain unrecognized and unheard.

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THE EDIBLE ART IN *SALT N' PEPPER*

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Food and drink figure into our everyday lives in a number of ways. Food has become a subject of art, continually inspiring artists and writers. Functionally, food is “a substance taken to maintain life and growth” (Oxford Dictionary 291). Aesthetically, it is a sensory experience, a form of beauty not tainted by violence (<http://foodandwineaesthetics.com/category/art-and-food-2/>). Culturally, it “is a many- splendoured thing, central to biological and social life” (Counihan and Van Esterik 1).

Eating and drinking bear symbolic, aesthetic, spiritual, economic, cultural and social values. Food belongs simultaneously to the world of aesthetics, economics and culture. Food as an object of aesthetic experience appeals to our senses. We describe it in terms of its visual presentation and sensual composition. It is very difficult to disentangle food from its web of production, distribution, and consumption. Economics tries to find answers to the “who?” questions: who farms, who trades, who eats, who cooks, who manages waste, who profits, and so on. Food is central to religious traditions throughout the world. Religions typically prescribe which food should be eaten and which should be avoided; they assign significance to food production, preparation, and consumption; and they connect

dietary regimentation with moral conduct and spiritual salvation. Food and culture define one another. Food preparation and consumption are bound to the beliefs, practices, and laws of nations and cultures.

Food has become a recipe for success in Malayalam cinema. The New Wave Kitchen opens with Aashiq Abu's *Salt N' Pepper* (2011) and the trend continues in Anwar Rasheed's *Ustad Hotel* (2012). More and more movies in the food genre are being produced in Malayalam film industry. Food has a special relevance and makes its presence practically everywhere in these movies. The films weave into their narratives the love for well-cooked food and food turns out to be a strong base connecting various stories.

This paper attempts to interpret the images of food in the movie *Salt N' Pepper*. The objective is to look at the presentation of food as an aesthetic object, a contextualized object and a marker of identity. The social and cultural functions of food are also examined.

Salt N' Pepper (2011), directed by Aashiq Abu brings into its canvas a world signified by food or rather food becomes a real sign and in this process juxtaposes the questions "eat to live" or "live to eat". The ingredients and flavours, techniques of preparation, utensils used, all form a part of the system of differences in signification. The film discusses food as a code to create and share meanings with others.

Food appears throughout the movie as a subject of aesthetic judgement. The decorative use of food appeals to the viewer's senses. Vivid scenes of food preparations and consumption are consistently shown. The tagline of the film is *Oru Dosa Undakkiya Katha* ("The story born out of a Dosa") and the subtitle is "Somethin's cooking".

The title song *Chempaavu Punnellin Choro* composed by Rafeeq Ahamad is a visual fiesta featuring Kerala cuisine. Images of brown *unniyappams*, multi coloured halwas, yellow jelabis, crispy banana chips, big dosas, *mulakaracha meen curry*, *palada pradhanam* and hot *mulamkutti puttu* filled the screen. Colours, flavours, textures, aromas and the sounds of cooking enhance the experience of tasting and eating.

The movie identifies the many food spaces right from *thattu kada* and tea stalls to popular hotels in Kerala, the different occasions like festivals, marriages where food is cooked and served and the best combinations like dosa-chutney, *kappa-meen curry*, *puttu-kadala* and *uppum mulakum*.

Food is inextricably intertwined with the emotions of the characters and is rarely shown without food or references to food. Kalidasan falls in love with Maya as she rings him to order "Thattil Kutti Dosa". Babu's culinary skills made him the cook of Kalidasan. He is from Kottarakara and is good in making *unniyappam*. Everyone enjoys Maya's banana fries. Manu stares at Meenakshi, with the froth of a hot coffee over his upper lip. Balakrishnan, an officer at an excavation site, explains the impact of a steaming hot tea, after a terribly drunken night. And the lecherous technician who's after Maya at work, always has something to chew.

The consciousnesses of the characters are interpreted in terms of food. The involvement in food preparation becomes a conscious strategy to come in terms with the sense of loss. *Salt N' Pepper* employs food preparation as a narrative strategy to tell stories, to evoke memories and to represent the desires of the body. Maya is

indulging in culinary activities in memory of her dead mother. She brings her mother back to life through cooking. Here food permits the return to the past and becomes a space for realization of the absent. The absences are given a presence through food. Food acts as a metaphor in depicting multilayered relationship. Kalidasan tells Maya the secrets of baking a multi-layered cake known as Joan's Rainbow cake, made by a French soldier's wife as the Second World War raged on, when she anxiously waited for her husband. The sequence of baking the cake is saturated with love. The cake ascertains romance. Thus food locates the dislocated. Each meal cooked is a realization, a recollection and a relocation.

The film includes within its purview not only the enjoying of food but also the dislike towards food. Kalidasan cannot enjoy the food prepared by Babu when his mind is tensed. Manu calls the drink (enjoyed by Kalidasan and Babu) *koora rum*. Mujeeb's tea is mocked as *oola chaya*. The movie has many scenes of eating food in the presence of good company. Food has provided a fruitful site for understanding social relations, family and kinship.

The meanings and significance of food extend far beyond its nutritive function. Roland Barthes in his essay "Toward a Psychosociology of Contemporary Food Consumption" defines food:

For what is food? It is not only a collection of products that can be used for statistical or nutritional studies. It is also at the same time, a system of communication, a body of images, a protocol of usages, situations and behaviour. (21)

The cooked meals on the table brings in memories. Nostalgia is a form of selective memory, history without errors enabling us to

enjoy the past without guilt. The contemporary culinarians in the movie are longing for a return to the old days. Rather than a return to the past, the contemporary fascination with food traditions is a reinterpretation and recontextualization of the past with an eye toward a better tasting future.

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COMPARATIVE STUDY OF TWO SELECTED PTERIDOPHYTES OF CARMEL COLLEGE CAMPUS

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ABSTRACT

In this present study we attempted to depict the variations and similarities of two selected pteridophytes of varying habitats from our campus namely Pteridium and Ceratopteris by studying morphological, anatomical and palynological studies. The study points towards the fact that each pteridophyte is specially adapted to its own habitat by morphological, anatomical and palynological features.

Key words: *Ceratopteris, Pteridium, Palynology, habitat.*

Introduction

Pteridophytes are a group of higher cryptogams possessing a well developed vascular system, hence also called vascular cryptogams. The name pteridophyta was originally assigned to this assemblage of plants by Hackel because of the presence of pinnate or feather like leaves. In the plant kingdom, pteridophytes occupy as a position between bryophytes and gymnosperms.

Most of living members are terrestrial and prefer to grow in cool and shady places while some are xerophytic, eg: *Selaginella rupestris*. Many pteridophytes are found on aquatic conditions, eg: *Marsilea, Salvinia, Azolla, Ceratopteris* etc. Four particular types of

habitats that pteridophytes are found in are (i) most shady forests (ii) crevices in rock surfaces specially when sheltered from the fall of sunlight (iii) acid wetlands including swamps and bogs, and (iv) tropical trees bearing many epiphytic species. Pteridophytes are mostly herbaceous, and rarely climbers (eg: *Lygodium*) and trees (eg. *Schizae*, *cyathea*). Tree ferns are found in the Himalayas. Adult plant is a sporophyte. The plant body is differentiated into root, stem and leaves. In most general gametophyte or prothallus is simple, green and heart – shaped. Life cycle is with typical heteromorphic alternation of generations.

The classification of pteridophyta has always been arbitrary and unsatisfactory. Different schemes have been proposed by different authors at different times. Pteridophytes divided under 4 divisions. Psilophyta, Lycophyta, sphenophyta, filicophyta; psilophyta included psilophytes, Lycophyta include lycopods, sphenophyta includes horsetails and filicophyta includes ferns.

Economic Importance of Pteridophytes

Food Plants: Some pteridophytes are widely used as a source of food and fodder.

Biological fertilizer: It is commonly called mosquito fern *Azolla* plants are used as biological fertilizer in the rice fields of many countries.

Landscape plants: Several ferns are grown in horticulture as landscape plants, for cut foliage and as house plants. Eg:-*Nephrolepis enaltata*, *Asplenium nidus*.

Removal of heavy metals: Some ferns like *Pteris vittata*, are found to be useful in the removal of heavy metals, especially arsenic, from the soil.

Ornamental pteridophytes: The beauty of the leaves of several pteriophytes makes them the most sought after plants for lawns, green houses and gardens.

Ecological indicators: Equisetum is an indicator of gold and some other minerals in the soil.

Medicinal value of pteridophytes: Many pteridophytic plants are used for treating several human ailments such as gastro intestinal problems including stomach ache, peptic ulcers, diarrhea and dysentery etc. *Ceratopteris thalictroides* fresh juice of leaves stops bleeding of wounds skin diseases. *Pteridium aquilinum* a) fronds and rhizomes – antihelminthic astringent b) infusin of plants, urine flow etc..

Review of Literature

Even after the period of over 130 years, the works on pteridophytes were standing as the classical works and are being extensively referred by Pteridologists in India and South East Asia, not only in taxonomy but also for morphology, anatomy and palyonology. Several studies were there in the field of Pteridophytes. Bhutta *etal* in 1987 made a modified technique to study the xylem of plant organ. Carlequest *etal* in 2001 studied about structural, ecological and evolutionary significance of vessels in ferns. Murtaza made morpho palynological studies on climbing fern *Lygodium japonicum* in 2004. Again Murtaza *etal* made

another study on anatomical and palynological studies in some filicales was made in the year 2006. A clear cut view on preserved *Woodwardia* was made by Pig *etal* in 2001. Stewart in 1957 studied about fern and fern allies of Western Pakistan. H.Schneider made a study of endemic fern genus in 2004. R. Tryon *etal*. Al-Sheri *etal* give an illustrated description of *Sellaginella imbricata* from Saudi Arabia in 2009. Bhutta in 1973 studied about germinating spores of pteridophyta. Prantl in 1881 made a study on morphology of Schizean ferns. Palynological study on some species of *Asplenium* by Gamal *etal*. Morphopalynological and anatomical studies on fan fern *schizaea dichotoma* (L.) Smith from Neelum valley, Azad Kashmir was made by Ghulam Murtaza in 2008. Daniels, R. E. In 1985 Studied the growth of *Pteridium aquilinum*. Williams and Foley, in 1976 seasonal variations in the carbohydrate content of bracken fern. Singh in 1963 made anatomical and ecological studies of some ferns of Mussorie. Chandler in 1905 studied the arrangements of vascular strands of leptosporangiate ferns. Donsellarin 1969 made a study on distribution and ecology of *Ceratopteris* in Surinam. Johnson in 1961 studied the genus *Ceratopteris* in Malaya. Lloyd in 1973 conducted a study on sexual and vegetative reproduction in Hawaiian *Ceratopteris thalictroides*. McGrath *etal* assessed gene copy number in the homosporous ferns *Ceratopteris thalictroides* and *C. richardii* (Parkeriaceae) by restriction fragment length polymorphisms. The importance of spore morphology in relation to the plant taxonomy and evolution has been understood since the time high resolutions of microscope revealed the extraordinary architecture of the spore wall surfaces. These advancement in optical technology and in microtechniques, have

served enormously have served enormously in gaining an understanding of the spore wall structure, sculpture and their development, to the benefit of phylogenetic morphologists working in the ferns

Materials and Methods

In this study we examined 2 pteridophytes one of terrestrial and other of aquatic habitat (namely *Pteridium* and *Ceratopteris* respectively) and studied the morphological anatomical and palynological features to make a clear cut view on similarities and differences of these two.

For this study we collected the plant from our College campus and took into the lab and made detailed morphological studies and after that thin anatomical studies were made by taking cross section of various plant parts, the sections were stained in saffranine and mounted in glycerin and examined under compound microscope. For palynological studies we practiced by acetolysis, from the result we made the conclusion.

Result

Pteridium

Kingdom : Plantae
Division : Pteridophyta
Class : Pteridopsida
Order : Dennstaedtiales
Family : Dennstaedtiaceae
Genus : Pteridium

Pteridium is commonly known as “Eagle fern” occurring in temperate and subtropical regions in both hemispheres. The extreme lightness of its spores has led to its global distribution.

It is a herbaceous perennial plant deciduous in winter the large roughly triangular fronds are produced singly, arising upwards from an underground rhizome and grow 13cm tall the main stem or stipe is upto 1 cm diameter at the base it readily colonize undisturbed areas.

Economic Uses

[1] *Pteridium* have been considered edible by many cultures throughout history and are still commonly used today as a foodstuff. Both fronds and rhizomes have been used to brew beer and the rhizome starch has been used as a substitute for arrowroot. Bread can be made out of dried and powdered rhizomes alone or with other flours. It was traditionally used for animal bedding, which later broke down to a rich mulch which could be used as fertilizer. When used by gardeners as a winter mulch it has been shown to reduce the loss of potassium and nitrogen and to lower soil P^H. Other uses were a packing material for products such as earthenware, as a fuel, as a form of thatch. The ash was used for degreasing woolen cloth.

Morphology

Rhizome

(i) Long type:- They arise from the parent axis and grow in the same direction thus penetrating deep in soil. They have longer internodes and do not bear leaves.

- (ii) Intermediate:- After their origin from the parent axis they grow obliquely upwards for some distance and then run horizontally. They do not bear leaves.
- (iii) Short:- They also grow obliquely upwards and then run horizontally a little below the soil surface. They bear leaves and have short internodes.

Branches of varying length that fall within the range of these 3 type have also been reported. The profusely branched rhizome presents a complicated system of branching and affords an efficient anchorage to the species it is profusely covered with multicellular hairs, the scales are absent.

The young plant has an unbranched creeping rhizome with 4-10 alternating leaves. It grows under the soil and soon bifurcates dichotomously into 2 equal dichotomies. Each dichotomous branch bears a leaf near its point of origin from the main axis both these branches grow deep into the soil and bear leaves that are arranged in a spiral manner. The axis continues to branch dichotomously but there dichotomies are an equal. The shorter branch bears a leaf it appears short and stumpy so that at maturity it look like a bud at the base of leaf these are remanded is Short shoots. The longer dichotomous branch is regarded long shoot.

Petiole

Petiole is present which is for bearing pinnae. Length of petiole may vary. The young plants bear leaves on the main axis but as the plants grow older the leaves seem to be restricted to the short and thick branches. The older portions of rhizome are beset with bases of old leaves and hair. They arise on the upper side of

the rhizome and are borne in an alternate manner. They arise at an appreciable distance from each other and are circinate coiled when young. A mature leaf may vary in length from 2-12 feet. It is tripinnately compound and has a distinct petiole that is as long as the pinnately divided lamina. The portion of the petiole that extends into the lamina is called the rachis the lower branches of the rachis are longer and gradually decrease in length towards the apex so as to give a deltoid or a conical appearance to the laminar portion.

The pinnules are traversed by a large and prominent mid-rib from which arise lateral veins. The veins run obliquely upwards and the furcate pinnules are firm and rough to touch, sub coriaceous. The petioles are covered with unbranched and multicellular hair.

Sporophylls and Sori

Every leaf in *Pteridium* is a potential sporophyll as there is no segregation of reproductive and vegetative leaves. The ultimate segments of the lamina or the pinnules bear sporangia on their margin. The sporangia develop on marginal receptacles and are grouped in a continuous or a confluent and a linear type of sori. It is also called a coenosorus. As a matter of fact numerous smaller sori occur so close to each other that they lose their identity and appear as one long sorus disposed along the two lateral margins of the fertile pinnales. Sori linear, continuous, situated just inside the inrolled margins; pseudo-indusium continuous. Sorri contains many sporangia which are club shaped.

Spore

Spore numerous inside the sporangia.

Anatomy

Petiole

The petiole is simple in structure. It remains surrounded by a layer of epidermis which is being followed by sclerenchymatous hypodermis and the rest of the inner portion of petiole is being filled by parenchymatous ground tissue. Many vascular bundles are arranged in outer and inner rings. Xylem is surrounded by phloem. Epidermis is single layered and it covered by cuticle. Ramenta arise from some of the epidermal cells.

Pinnule

A T.S through the pinnule reveals that the internal structure is similar to that of a bifacial leaf. These are the usual two layers of epidermis with stomata restricted to the lower epidermis.

In between the two epidermal layer is the mesophyll tissue which is clearly distinguishable into palisade parenchyma and the spongy parenchyma. The cells of this layer contain abundant chloroplasts. The spongy zone is made up of numerous loosely arranged and lobed parenchymatous cells. They enclose small and large intercellular space and contain chloroplast the palisade is absent in region of the veins where the cells are compactly arranged so as to give strength to this region.

The vascular bundle is spherical in shape and is surrounded by a distinct endodermal layer. It may be concentric or collateral.

Sporphyll

A vertical section of the sorus reveals that the receptacle is traversed by a vascular strand that runs underneath the sporangia

and connects the free end of the veins. The sorus is protected by two flaps that grow a little to cover the sporangia from Lower end. The upper indusial flap is formed end the upper indusial flap is formed by the reflexed margin of the pinnule and in well developed. The lower industrial flap is true indusium when the upper flap is a false indusium because it is simply a margin of the pinnule and not a specially developed structure. The lower on the free indusium is not well developed and is a thin sheet at tissue made up of a single layer of thin walled cells.

Sporangium

Sporangium is club shaped with stalk. Many sporangium is present and it has stomium annulus etc. It is homosporous also.

Spore

Globose trilete spores are there with exine and intine.

Ceratopteris

Introduction

Kingdom	-	Plantae
Division	-	Pteridophyta
Class	-	Pteridopsida
Order	-	Polypodiales
Family	-	Pteridaceae
Subfamily	-	Ceratopteridoideae
Genus	-	Ceratopteris

Ceratopteris is the only genus among homosporous ferns that in exclusively aquatic. It is pan tropical and classified in the

ceratopteridoideace subfamily, of the pterodaceae. Erect aquatic or sub aquatic ferns of moderate size. Rhizome short, fleshy, horizontal and ascending to erect, loosely rooted in the mud. Floating, radial, dictyostelic with numerous meristele and medullary strands, young parts bearing thin, ovulate, cordate, clathrate scales. Fronds stipulate, the stripes fleshy with numerous longitudinal air canals, abaxially rounded and ribbed, adaxially flattened, vascular bundles in a peripheral ring, one with each rib and several smaller medullary strands, lamina dimorphic sterile frond spreading, 2-3 pinnatifid with broad membranous leaves, venation reticulate without induced free veinlets, fertile fronds erect, longer, narrower and more divided than the sterile, the lobes strongly curved to completely cover the adaxial surface, venation longitudinal branching at the bases of the lobes. Sporangia Solitary, Scattered Along The Veins, Exinduciate But Protected By The Continuous Reflexed Margin Of The Lamina, Large, Short – Stalked, Annular Broad, Irregular, Of 30-70 Thickened Cells, Or Lacking, Containing 16 To 32 Spores. Spores Large Frile, Ribbed With Irregular Long Meshes.

Economic Use

It Is A Fairly Popular Aquarium Plant, Often Sold Under The Name "Water Spirit". It May Be Grown As An Emerged (Floating) Plant Or As An Immersed Plant Rooted In The Substrate. The Most Common Species In Aquarium Use. Plants Of This Genus Have Also Been Used For Food, As A Green, With Common Name "Water Lettuce". However, It Is Now Known That These Ferns Are Also Carcinogenic If Ingested.

Morphology

Leaves

The Leaves Are Dimorphic. The Sterile Leaves Are Spreading With The Broad Lamina, Which Is Two Or Four Times Divided Pinnate Or Trifoliate. Fertile Leaves Are Erect And Are Divided Into Narrow Segments. 2-3 Pinnafied With Broad Membranous Leaves, Venation Reticulate Without Included Free Vein Lets

Petiole

The Stem Is Small And Fleshy With Leaves On Its Upper Surface And Whorls Of Adventitious Roots At Its Base. In Young Condition They Shows Circinate Vernation

Morphology of Sporphyll

The sporangia are sub sessile and leptosporangiate in development. They extend linearly forming two parallel rows on either side of narrow leaf, and are protected by inrolled leaf margin. The young sporphyte is protostelic.

Sporngium: Linerra sporangium with false inducium. Inducium is formed by rolling of leaf margins. Coenosorus also.

Spore

Many spores which are trilete, with mesh like carvings on the surface.

Anatomy

Petiole

The petiole is simple in structure. Epidermis is single layered. Its cells have heavily cutinized outer wall. The cortex is differentiated

into outer chlorenchymatous and inner sclerenchymatous regions. Chlorophylls are embedded in aerenchyma, it has a polycyclic dictyostele.

Spore

Spore trilete, ribbed with irregular long meshes spore are alike but germinate to produce gametophytes of two morphologies. All spore are a kind.

Comparison between *Pteridium* and *Ceratopteris*.

Similarities

	<i>Pteridium</i>	<i>Ceratopteris</i>
Leaves	Pinnate	Pinnate
Meristele	Present	Present
Spore	Homosporous	Homosporous
Number of spores	Numerous spores	Numerous spores
Vegetative reproduction	By spores	By spores
Uses	Freshly edible	Freshly edible
Life cycle	Alteration generation (heteromorphy)	Alteration of generation (hetromorphic)

Differences

	<i>Pteridium</i>	<i>Ceratopteris</i>
Rhizome	With special type of branching	No such branching
Leaves	Homophyllous	Heterophyllous
Inducium	True inducium present	False inducium
Spore	Trilete spores without meshes	Trilete spores with meshes
Anatomy	Without air spaces	With large air spaces

Discussion

According to Carlquist in 2001 vessel presence and degree of specialization in Pteridium vessels may bear a relationship to the wide ecological tolerances of the genus. Bhutta in 1987 stated that the xylem of pteridophytes are related to its living habitats. Murtaza 2009 also reported that the structure, shape etc of pteridophytes are also related with their living patterns. Gamal studied that morphoanatomical and palynological features of Schizea dichotomous is suitable for its habitat and life pattern. As per our study also there is variation in morphoanatomical and palynological features of the selected ferns of the study in accordance with the living conditions. These are certain adaptation for their life.

Summary and Conclusion

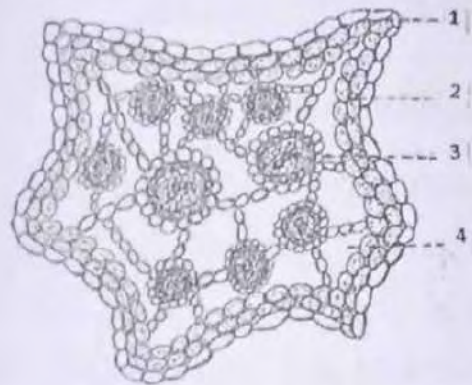
In this present study we examined to depict the variations and similarities of two selected pteridophytes of varying habitats from our campus namely *Pteridium* and *Ceratopteris* by studying morphological anatomical and palynological studies. The study points towards the fact that each pteridophyte is specially adapted to its own habitat by morphological, anatomical and palynological features.

In spite of many similarities there are differences between the two different ferns of different habitats. There are so many differences which help them to lead a comfortable life of their own in their native places. They have their own morphological, anatomical and palynological adaptation suitable for their habitat and life cycle.



Ceratopteris

Ceratopteris petiole T.S.



1. Epidermis 2. Hypodermis 3. Vascular bundles 4. Air space

Ceratopteris Fertile sporophyll T.S.



1. Epidermis 2. Sporangium 3. Spore 4. Indusium

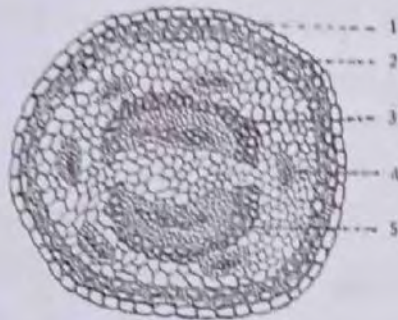
Ceratopteris spore





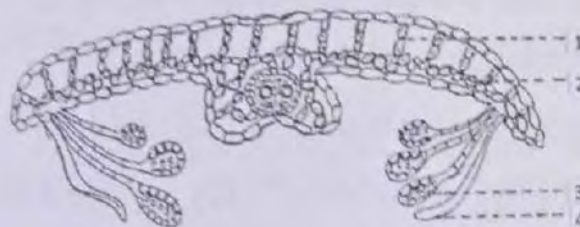
Pteridium

Pteridium petiole T.S



1. Epidermis 2. Hypodermis 3. Sclerenchyma patch 4. Outer vascular bundle 5. Inner vascular bundle

Pteridium sporophyll T.S.



1. Palisade 2. Spongy tissue 3. Sporangium 4. indusium

Pteridium spore



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न्यायमूर्ति वी. आर. कृष्णस्यर

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भारतीय विधि - न्याय व्यवस्था की नीति ज्वाला जस्टिस वी आर कृष्णस्यर का स्वर्गवास हुआ। विधि व्यवस्था को मानवता के साथ जोड़नेवाले आप साधारण आदमी के पक्षधर होकर जीवन भर सामाजिक न्यायकर्ता के रूप में कार्य करता रहा। अच्युतम न्यायालय में न्यायाधीश के रूप में पैंतीस वर्षों तक वे कार्यरत रहे। अपने को जीवन के विविध क्षेत्रों में कार्यकुशल स्थापित किया। सुप्रसिद्ध न्याय - कर्ता, जन - प्रतिनिधि, समाज सेवी के रूप में आप महान कर्मयोगी स्थापित हुए। समाज कल्याण ही उस मनुष्य - स्नेही का एकमात्र लक्ष्य रहा। जीवन की भीड़भाड़ में उपेक्षित आम जनता के पहरेदार बनकर वे काम करते रहे। विधि - न्याय व्यवस्था को साधारण जनता से जोड़ने का महत्वपूर्ण प्रयास आपने ही पहली बार किया था। अपने विरुद्ध जो भी विचार विमर्श हुए थे, उनके प्रति सहिष्णुता के साथ अटल होकर, धीरोदात्त बनकर अपने कर्मक्षेत्र में कृष्णस्यर आगे बढ़ते रहे। केरलीय समाज में आप विशेष रूप में हस्तक्षेप करके लोगों का ध्यान आकर्षित किया था। बिना कोई पूर्वानुमान से वे सामाजिक क्रियाकलापों का आलोचना किया करते थे। उनके विचार विमर्शों में तीव्रता और सामाजिक दायित्व उभरकर सामने आते हैं। प्रसिद्ध वकील एफ.एस. नरिमान उनके संबन्ध में ऐसा कहा था कि, "When the justice krishna Iyer speaks the nation listens" सर्वोच्च न्यायालय और उच्च न्यायालय में वे न्यायाधीश रहे। विधि व्यवस्था को नये रूप में ठयाख्यायित करने का जो परिश्रम उन्होंने किया था, ज्यादा सराहनीय है। देशभर में उनके प्रस्तावों पर चर्चाएँ हुआ था। सौ साल की सार्थक जीवन बिताने के बाद, अब वे अपने कर्मपथ से हमेशा के लिए जा चुके हैं।

एडवोकेट वि.वी. रामस्यर और नारायणी अम्माल के सुपुत्र बनकर आपका जन्म उन्नीस सौ पन्द्रह (1915) नवंबर को केरल के पालघाट जिला में शेखरीपुरम गाँव में हुआ था। तमिलनाडु के अण्णामलै विश्वविद्यालय से वि.ए और मद्रास विश्वविद्यालय से वि.एल की उपाधि प्राप्त की। इसके बाद अपने पिताजी की तरह वे भी मलबार, दक्षिण कानरा और कूर्ग के अदालतों में वकालत करने लगे। वामपंथी विचारों से आप बेहद प्रभावित थे। साम्यवादी विचारधारा के सहयात्री होने पर भी वे आस्थावादी रहे। आप सच्चे ईश्वर भक्त थे। वामपंथी कार्यकर्ताओं की वकालत भी करते थे। लोग ब्यार से उन्हें स्वामी पुकारते थे। उन्नीस सौ बावन में (1952) कण्णुर जिला के कुत्तुपरम्बु से स्वतंत्र उम्मीदवार के रूप में मद्रास विधानसभा के चुनाव में चयनित हुआ। उन्नीस सौ सत्तावन (1957) के चुनाव में तलशशेरी से वामपंथी स्वतंत्र उम्मीदवार बनकर प्रथम विधानसभा में सदस्य बने। इ.एम.एस. नंपूतिरिप्पाडु के नेतृत्व में केरल के सर्वप्रथम मंत्रिमंडल में विधि मंत्री बन गये। समाज - कल्याण, विजली, गृह कार्य आदि विभागों का कार्य - संभालन भी आपने किया था। उन्नीस सौ अड़सठ (1968) से तीन साल तक वे केरल

के उच्च न्यायालय के न्यायाधीश रहा। उन्नीस सौ तिहत्तर (1973) में 'लो कम्मीशन' का सदस्य बनकर अपना कर्मक्षेत्र दिल्ली बना लिया था। उन्नीस सौ तिहत्तर (1973) में आप सर्वोच्च न्यायालय के न्यायाधीश बने और साढ़े सात वर्षों तक नीति देवता का संरक्षणकार्य करता रहा।

केरलीय समाज के लिए उनका योगदान सराहनीय है। भु-स्वामित्व से संबन्धित क्रान्तिकारी नियमों के कार्यकर्ता के रूप में आपका नाम प्रथम में आता है। अनेक सिंचाई योजनाओं का प्रारंभ भी, मंत्री बनकर उन्होंने ही किया था। उन्नीस सौ उनसठ (1959) में जब विधानसभा का विघडन हुआ वे फिर उच्च न्यायालय के कर्मयोगी बन गये। 'लो कम्मीशन' की सदस्य बनकर आपने आम आदमी की परिरक्षण केलिए नियमों को नये रूप में लागू करने की कारवाइयाँ की थी।

प्रगतिशील और परिवर्तनशील विचारों को उन्होंने न्याय - प्रस्तावों में अपनाया था। जब कभी न्यायपालिका अपना कर्तव्य भूलकर पथभ्रष्ट होने लगा था, आप स्वयं मशाल लेके उसे अपने पथ दिखाया था। न्यायपालिका का विचार विमर्श आप समय - समय पर किया करते थे। अदालती कारनामों का विचार - विमर्श करते समय उन्हें कभी भी न्यायालय - अयमान का भय नहीं हुआ। सही लगने पर वे अपनी राय निर्माक होकर प्रकट करता रहा। कानून की व्याख्या उन्होंने अनुच्छेदों के धरातल पर मात्र नहीं किया था। मानव प्रेम ही उनकी मुख्य मुद्दा रहा। आम जनता को नीति देवता से जोड़ने का भरसक प्रयास आप करते रहे। लोकहित के लिए मुकदमेबाजी करने की आवश्यकता पर उन्होंने जोर दिया। उच्चतम न्यायालय में न्यायाधीश रहकर वे अपने नाम को भारतीय इतिहास में सुवर्णाक्षरों से जोड़ दिया था। उनके न्याय - प्रस्ताव संपुर्ण भारत का ध्यान आकर्षित करता रहा। भूतपूर्व प्रधानमंत्री श्रीमती इंदिरागांधी से जुड़े इलाहाबाद उच्चन्यायालय के अभिनिर्णय पर उच्चतम न्यायालय के न्यायाधीश के रूप में इंदिरागांधीजी की सदस्यता रद्द करने का जो न्यायिक निर्णय उन्होंने लिया था बहुचर्चात रहा। यह निर्णय देश में आपातकाल की घोषणा के लिए कारण बना था। इसी तरह के अनेक महत्वपूर्ण प्रस्ताव उनके द्वारा किये गये। 'रत्नम नगरपालिका केस' के दौरान उन्होंने नगरपालिकाओं की कर्तव्यों पर विशेष रूप की बातें प्रस्तुत की। उच्चतम न्यायालय में कर्मरत होते समय आप सात सौ तक के गंभीर और महत्वपूर्ण न्याय प्रस्तावों को भारतीय समाज के सामने रखा था। मौलिक अधिकारों को नई परिप्रेक्ष्य में देखने का और भारतीय संविधान की पुनर्व्याख्या करने का कार्य भी आपने ही किया था। 'लोकअप उत्पीड़न' को रोकने के लिए डि.के.बसु केस के संबन्ध में जो ग्यारह अनुदेश उनके द्वारा रखे गये थे, ज्यादा सराहनीय रहा। जेल - कैदियों के संबन्ध में जो निर्णय लिया गया, महत्वपूर्ण स्थापित हुआ। कैदियों को भी अपना संवैधानिक अधिकार है। उन्हें हथकड़ी पहनकर जेल में नहीं रखना चाहिए। व्यक्तिगत स्वतंत्रता का संरक्षण करना कानूनी व्यवस्था का दायित्व है। कानून और संविधान की आधारशिला मानवता से बने हुई होना चाहिए। एक बार कान्सर रोगी सेब्यर का मुकदमा उनके सामने आये। वह बैंक कर्ज चुकाने में परास्त हो गया था। कृष्णाच्यर ने विधि - प्रस्ताव करते समय पूछा कि, मैं सेब्यर से कर्ज चुकाकर इसे मृत्यु के लिए छोड़ दूँ या इनके हाथ में जो पैसा है, उसके संबल इसे इलाज केलिए भेज दूँ? मनुष्य स्नेही कृष्णाच्यर के जीवन में इस तरह की कई उदाहरण हम देख सकते हैं।

समाजिक विकास के अनुरूप इस्लाम - धर्मों नियमों में फेरबदल लाने का विनम्र सुझाव भी

उन्होंने रख लिया था। उनके व्यंग्यपूर्ण आलोचनात्मक वक्तव्यों के लिए कई उदाहरण प्राप्त हैं। एक बार उच्च न्यायालय को छुट्टी देकर कुछ न्यायाधीशों ने क्रिकेट देखने गया था, तब उन्हें व्यंग्य रूप में कहा था कि क्रिकेट कोई 'जूडीष्यल गेम' नहीं है। न्यायपालिका की आलोचना करने में वह कभी हिचकते नहीं थे।

उनकी भाषा में अभूतपूर्व प्रवाह था। उनकी काठबमयी भाषा न्याय - प्रस्तावों को ओर भी सुन्दर और गंभीर बनाया। अंग्रेज़ी भाषा में उनका ज्ञान अपार था। विधि प्रस्तावों से जुड़कर जो भाषाई प्रयोग किये गये, आक्सफोर्ड कोरा में भी स्थान प्राप्त कर चुके हैं। हिन्दी भाषा के प्रति भी उसका विशेष व्यापार था। वे हिन्दी भाषा की हितैषी थे। केरल के हिन्दी प्रचार - प्रसार संस्थाओं से उनका विशेष संबन्ध रहा।

'Wandering in many worlds' आपकी आत्मकथात्मक रचना है। सौ से अधिक कृतियाँ और कई आलेखों की रचना उन्होंने की है। इसमें ज्यादातर विधी कानून संबन्धी हैं। न्यायालय से सेवनिवृत्त होने पर भी वे समाजसेवी रहा। संपूर्ण मानवकुल की उन्नति उनका लक्ष्य था। भारतीय समाज के समस्त दैनिक क्रिया - कलापों में आप अपनी अन्तिम दिनों तक विचारात्मक, ओजपूर्ण वक्तव्य प्रकट करता रहा। जनता आपकी राय जानने को बेहद इच्छुक थे। उनका निधन भारतीय नियम व्यवस्था को भारी नष्ट पहुँचा दिया है। भारतीय नीति व्यवस्था के मानवीय मुख का अस्त हो गया है। नीति व्यवस्था को मार्ग दर्शने के लिए आपकी चार्दों की प्रज्वलित ज्योति हमेशा वहाँ जलते रहेंगे। मानवता के उपासक एंव विधि - वेत्ता जसटिस वि.आर. कृष्णस्वर को सादर प्रणाम और श्रद्धांजलियाँ।

NATURE, NURTURE AND NATION IN MAGGI ADVERTISEMENTS

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Recently, several Indian states including Kerala banned Nestlé's Maggi instant noodles sale. Food Safety and Standards Authority of India (FSSAI) banned all nine approved variants of Maggi instant noodles along with oats masala noodles suggesting them unsafe and hazardous for human consumption. Besides Nepal, Maggi noodles has also been withdrawn in five African nations - Kenya, Uganda, Tanzania, Rwanda and South Sudan by a super-market chain after a complaint by the Consumer Federation of Kenya. It was revealed later that the United States Food and Drug Administration (FDA) had refused import of the noodles in January 2015 on grounds similar to the reasons for ban in India. FSSAI has identified three problems with Maggi. Lead levels in Maggi noodles are higher than the permissible quantity and they contain MSG. They have done misleading labeling of products and released their product oats masala noodles without approval.

Nestlé has been reprimanded earlier for its advertising for not adhering to marketing regulations in developed countries and making misleading claims in developing countries. In October 2008, Nestlé mistakenly aired an advertisement intended for Bangladeshi Television on British TV. The commercial made false claims that the noodles would "help to build strong muscles, bone and hair". The British Advertising Standards Authority said that the

advertisement did not abide by the new European Union Consumer Protection Legislation, by which advertisers have to give proof of health claims.

Nestlé introduced Maggi 2 Minute Noodles in India in 1982 when the only place to get noodles was Chinese restaurants. Its success in India is closely connected with the country's first indigenous soap opera *Hum Log* which began its telecast on 07 July 1984. Doordarshan entered into a contract with Food Specialties Limited, the Indian subsidiary of Nestlé to sponsor the production of the serial in return for the rights to nationally advertise its product - Maggi 2 Minute Noodles – during, before and after each episode. Maggi's launch in the total advertisement slots of just 5 minutes during the breaks of serial which ran for over 156 episodes helped the product to establish a brand identity as snack food across the country. This reached to sixty million viewers across India in 1984-85. There was a huge hike in the national sales figures for the product after the company's sponsorship of *Hum Log*. The sales for Maggi noodles "increased from none in 1982 to 1,600 tons in 1983, 4,200 tons in 1985, 10,000 tons in 1990 and 15,000 tons in 1998." (Qtd. in Kumar, 33) In a little while, the Food Specialties Limited campaign for Maggi noodles became a textbook example of how a company could advertise and market new consumer products on Indian television. Till ban, they have enjoyed 90% of the instant noodles market in India and claimed India to be Maggi's largest market for instant noodles in the world. Due to ban, Nestlé India's shares at the Stock Exchange fell. The biggest worry for the Swiss Company is the loss of popular trust in the Maggi brand which they have built through misleading advertisements in India.

The present study analyses selected advertisements of Maggi 2 Minute Noodles which made it the third staple Indian food after wheat and rice. Maggi commercials paved the way for changing lifestyles and eating habits of Indian consumers. The increasing purchasing power of the growing middle class too helped the growth of Maggi noodles sales in India. With 29 states and 7 union territories; 23 constitutionally recognized languages and hundreds of dialects; and social, cultural, religious, economical, political and ideological differences, a very inexpensive food supplement unanimously won the hearts of millions. However remote a village is, one will come across with Maggi 2 Minute Noodles. This has been the intrusion value of Maggi commercials. Strong brand identity has been created through celebrity branding, covert advertising and customer-generated advertising. Eye-catching displays of Maggi noodles at local stores boost the sales. The iconic yellow packaging together with the pictorial representation of noodles with added vegetables helped to reinforce the health factor. Ads of Maggi *Chota* pack of 50 gm worth Rs 5/- attracted the first time customers and Cuppa Mania grabbed the attention of mobile population and young professionals. Thus Maggi became the most preferred snack of new generation.

Ad analyzing is important to understand its intended meaning and impact. Maggi ads claim to have higher consumer interest and brand recall. In its earliest ads, the brand popularized the image of the "Maggi Mom." These were directed against the nurturing sentiments of the traditional Indian mother who cared for her children as well as the modern working woman who find it very difficult to cook time-consuming food. Maggi ads thus became guilt-

inducing commercials. The embedded message in the ads induced in them a sense of guilt when they paid no heed to the product, which is advertised as good for their children. There was never a dull moment in these ads. The kids presented in them are endearing, appealing, good-looking and happy and therefore, role models for children. But they were hungry for a quick hot snack which was nothing but Maggi 2 Minute Noodles. Their enthusiastic voice "Maggi, Maggi, Maggi" seemed to echo in the psyche of viewers. Sound effects, music as well as visuals were lively and alluring. Children were fond of Maggi. Mothers loved making Maggi for it took only "2 Minutes" to cook. Nestlé insistently promoted Maggi with taglines such as "Mummy *Bookh Lagi Hei*" (Mummy I'm hungry), *Bas 2 Minute* (Just 2 minutes) and so on. These Maggi kids have all grown up to become young professionals, college students, young fathers and mothers to sustain the sentiments. The copy of the ad itself actually blends in to the background. The captivating slogan "Mummy I'm hungry" then reinforces this in an equally vague manner. Through numerous schemes of free samples and gifts on return of empty packs, Maggi conquered the hearts of the masses.

If we try to analyze the visual and textual components, elements and techniques of following ads featuring Madhuri Dikshit, some points are to be noted.



Fig. 1



Fig. 3



Fig. 3



Fig. 4

First of all, these ads were part of series of ads featuring the same model Madhuri Dikshit, just like ads featuring cute and bubbly Preity Zinta. They promote more than just products, namely images of beauty and success. They define beauty and success as “white and thin” like these Bollywood actors, promoting not only unhealthy and unrealistic images of beauty but class divisions based on racial priority. The message, in short, is that only North Indian fair women are successful just like the Western white female. We are exposed to these commercials every day, but we hardly ever realize their true impact on us. They can persuade us to buy Maggi even if we do not need, and desire a lifestyle that we would not necessarily agree with. They keep us informed of the latest products available, even if they do not get approval from FSSAI like Maggi Oats Masala Noodles.

The ads featuring Madhuri Dikshit are overwhelmingly yellow and red. Not only are the model's clothing and the typeface, but also the background is yellow and red. The model is a successful actor as well as mother in yellow and red T-shirt with number 7 written. She holds a red bowl full of yellow noodles in the first 3 ads and a red ball in the last advertisement. With her ardent look and smiling face, she seems to ask on-lookers to have a taste of yummy noodles. The celebrity is foregrounded especially in fig. 3 and celebrating people is in the background. The stereotypical assumption of caring mother with happy children is reinforced. The message creates unrealistic expectations amongst people.

The fast music and lyrics of Maggi commercials with alliteration and definitions of life are always joyful, funny and exciting just as in the ad of Maggi Oats *Masala* Noodles: "Come on, come on, oh let's get the morning oats, start the day in a healthy way, come on, move on....." Though the product has not got approval, the celebrity Madhuri Dikshit moving in accordance with the captivating music compels the viewers to buy the product. As a high profile celebrity, Madhuri Dikshit assures the credibility of the product and immediately generates the interest of prospective consumers. An everyday woman off the street has not been chosen to endorse this particular product. If used as a model, Oats *Masala* Noodles would not have sold half so well. Madhuri Dikshit's appearance with her hairstyle, outfit and make-up contributes to the advertiser's message.

The language and typeface used appeal to our emotion. The symbolic written text on the advertisement is in the signature font of

Maggi. Through this symbolic sign, the font is immediately recognized and associated with the brand through a process of signification with the signature font being the signifier and the brand being the signified. The catchy phrases "HEALTHY BREAKFAST BECOMES MORE ENJOYABLE" and "GOODNESS OF FIBRE OF 3 ROTIS" mislead readers. Giving Maggi 2 Minute Noodles, mothers can relax for they are giving healthy and enjoyable breakfast. Maggi presented as a good hot snack in the earlier ads, is now being presented as healthy breakfast with "GOODNESS OF CALCIUM AND PROTEIN! SHARE YOUR GOODNESS," so that you can have them for your lunch or supper. These are "THINGS THAT SHOULD BE WITH US FOREVER." They do not worry about other food. Here is an instant food which can give the taste and nutrients of real roti/rice/oats/ vegetable/ chicken which can make her family healthy and happy without going for the real one. It is a tasty, lip-smacking, "Xtra-delicious" supplement for time-consuming and delicious food. The implication is that Maggi can make everything possible for your family for they are "SPREADING KHUSIYAN FOR MORE THAN 3 DECADES." A decade ago, they declared, "In the last 20 years we have asked for just 2 minutes of your time" acknowledging the consumers' valuable time.



Fig. 5



Fig. 6



Fig. 7



Fig. 8



Fig. 9

Maggi ads without much ado arouse certain ideas and associations in our minds. For example, when we see the iconic figure, Amitabh Bachan featuring in their ads dressed in a formal suit but with an informal attitude and conversation, standing upright, we associate him with authority, education and success.

These ads seem to tell its readers on the product's lifestyle benefits and how the product made his life better. The launch of "Me and Meri Maggi" Campaign enabled customers to share their experience with Maggi and thus creating a nostalgic mood by letting them share their moments with Maggi. Maggie Recipe Challenge too attracted viewers.



Fig. 10

The multinational company Nestlé intentionally has not given its name in the foreground, instead the brand name in yellow typeface in red background is given. This is to give the impression that Maggi is MADE IN INDIA. Maggi introduced flavours specifically tailored to the Indian market predominantly *masala* in "authentic Indian flavor." This spice sachet has become a popular seasoning in its own right. Masala flavour is the leading flavour in instant noodles in India followed by chicken, vegetable and tomato flavour. "Meri Masala," "New Meri Masala," "Taste Bhi Health Bhi," "Spreading *Khusiyan* for more than 3 Decades" and "Grain

Shakti Veg Atta” are some instances of *Hinglish* catchy phrases that give the product a sense of oneness, sharing and togetherness combined with patriotic image. The ad gives the impression that Veg Atta Noodles are healthier as they are made up of whole wheat grain flour instead of *maida*, the refined wheat and of course, it contains real vegetables.

The logo of Nestlé Company in fig. 11 with the image of a happy family of endearing birds living in a warm, cozy nest symbolically claim to offer consumers family, shelter and warmth under one umbrella. The tagline “Good Food, Good Life” offers healthy life by having healthy food given by Nestlé. The irony is that by devouring Maggi noodles with added MSG and excessive lead, the regular consumers find refuge in hospitals. The written text includes portmanteau words made by Nestlé like “Nutri-licious.” This is a combination of “nutritious” and “delicious.” The first part of this new word ultimately turns out to be unhealthy whereas the second has come true because of added MSG which causes cancer and the like. Fig.12 too gives the same impression. In this way, the straightforward message of what is being said is contradicted by something as seemingly innocent as the typeface. Just like the child character in fig. 13, the customer in fig. 14 is greedily devouring noodles from a wayside local fast food MAGGI POINT and he represents the typical Indian attitude to Maggi noodles.



Fig.11

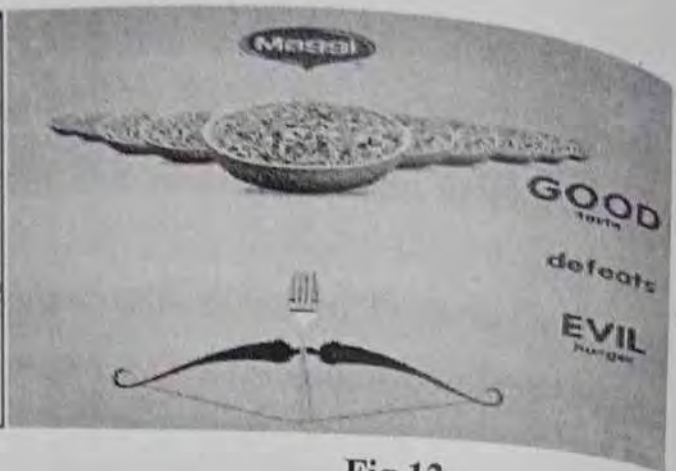


Fig.12



Fig.13



Fig.14

The advent of Maggi by Nestlé can be viewed as an example for globalization. It is the “global flow of cultural products and practices.” (Nayar, 178) Maggi’s dramatic entry in the 1980-s initiated a variety of neocolonialism in India. The commercialization of Doordarshan by Maggi paved the way for Nestlé ultimately taking over the local markets thus superimposing homogenous cosmopolitanism with their cultural artifact. They created a national identity of instant food through a sense of collective unity making the native Indians to freely accept and assimilate them. This nation as a myth unites people under one umbrella who “even lives supposedly in the larger cause of the nation” forgetting their denied culture (Nayar, 177). It’s an assertion by the global company how it would make life easier or more comfortable for their target audience.

Tools of neocolonialism - comforts and pleasures - are being offered by multinational companies like Nestlé in return for their monopoly in our economic, cultural, social, political and psychological environments. This is a fleeting phenomenon. This has marginalized some people who still believe in the goodness and sharing of traditional Indian food in favour of a majority who loves instant food and junk food culture which is projected as "national culture." It is not physical slavery for the neocolonised, but psychological slavery. Their willful acceptance of the stereotype "Maggi Mom" created by the dominant culture leads to this perpetual psychological bondage. They are said to be happy and healthy and enjoying physical freedom. This "freedom" is not freedom in the true sense. The false images of them are propagated by the dominant culture of neocolonisers. "The myth of the nation does not always retain its hold" (Nayar, 177). The temporary ban over Maggi products, in one way or other, is the local resistance to elite global culture.

No one can disagree with A.S.J. Tessimond when he makes a strong case against advertising in his poem, "Attack on the Ad-Man:"

This trumpeter of nothingness, employed
To keep our reason dull and null and void.
This man of wind and froth and flux will sell
The wares of any who reward him well.
Praising whatever he is paid to praise.
He hunts for ever-newer, smarter ways
To make the gilt seem gold; the shoddy, silk:
To cheat us legally: to bluff and bilk
By methods which no jury can prevent
Because the law's not broken, only bent.

Tessimond makes advertisers out to be inconsistent, unpredictable, crafty, shrewd and prepared to compromise with the truth. This is true when multinational companies like Nestlé fool people by giving misleading labeling of products in their advertisements.

Media texts such as advertisements, in this rat-race global world, aim to convey meaning at a single glance. It is the selection and combination of different signs and techniques that allow them to convey meaning through ads. The connotations that these signs have and what the readers/viewers/listeners decide form different types of signs. These tools allow brands like Maggi with celebrities to combine, to create a naturalized myth of the product such as "Maggi 2 Minute Noodles will make you healthy and happy". In one way or the other, it creates false needs and kindles our materialistic attitude. These media texts exploit our emotions suggesting that submission to these products is the only way to happiness and thus paving way for neocolonialism. We as a 'nation' become a colony from the perspective of globalised and consumerist world which manipulates and changes our social values and attitudes.

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ONLINE RETAIL MANAGEMENT BASED ON AUTONOMIC PRINCIPLES

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ABSTRACT

The ever increasing complexity of computing systems will cross the borders of human capabilities, leading to systems that are too complex to be administrated by human beings. System administrators will no longer be able to install, configure, maintain and optimize these computing systems of the future. The solution to this problem is developing a technology that allows computing systems to manage themselves. This solution is referred to as autonomic computing. In today's economic scenario, Online Retail Systems are gaining prominence and day by day increasing in size, leading to complexities difficult to be managed by human beings. Parallel developments in study of buying behaviors based on various techniques like data mining, decision trees, neural networks etc are gaining significant practical ground, which also increases the complexity to be managed. The basic idea is lay foundation for creation of autonomic systems based on the outputs from behavioral study, inventory management, etc to autonomically handle management of display, inventory predictions etc. The efficiencies achieved should in turn results in higher revenue as well as profits. Paper titles Online Retail Management Based on Autonomic principles deals with the development of taxonomy, a model framework for - autonomic online retail management and related standards. It will also delve into the theoretical background of specific techniques, which can be applied in this scenario.

Index Terms: Autonomic, retail, retail management, autonomic computing

Introduction

In this paper, online retail systems were identified as to explore the possibilities of applying autonomous principles to simplify the day to day management of complex systems. An underlying objective of this paper is also simplification of such concepts and their application. The visionary objective of this project is to set an initial footstep in exploring the vast possibilities such an approach opens up. The system interacts mainly with two types of users – the normal user for retail activities and admin users for control activities. The interactions of normal users are stored in event logs. Also, events which require immediate response are handled by the navigational event's module. The policy manager is responsible for providing temporary as well as long term responses. The inputs to the policy manager are the events, and the policy definitions. The admin user can intervene in the complete cycle by providing new inputs and also new policy definitions as well as parameter values. The system consists of multiple smaller managers, which will take care of the day to day tasks. The initial model plans to examine the following managers:

Associative Manager: Takes care of associative rules for product sales in the initial version. In future, it could also take care of associative behaviors emerging from navigational events.

Demographic Manager: Demographic patterns have a very big influence on navigational and buying behavior. Careful analysis, storage and use of these values can better the user experience and also the buying potential considerably.

Discount Manager: Any retail system is governed by a set of discounting policies, which varies from season to season and also with administrative inputs.

New Product Manager: Defines the values of new products coming into the system.

Associative Manager

The associative manager tries to find associations between elements and make use of this to effectively control the navigational behavior.



Fig. 1: Associative Manager

Suggest Associative Behaviour

Associative behavior is suggested in multiple ways:

- Data Mining Analysis
- Statistical analysis
- Random Association

Execute

Next step is to execute the behaviors defined in the planning step and measure the monitor the responses. In case of online retail,

the display characteristics will vary and the effects are registered. This could be in the form of products displayed, product associations displayed etc.

Record Navigational Behaviour

The navigational behavior is primarily captured in log file. The astTECSlog table described in the database section is the key to recording of this navigational behavior.

Analyse Navigational Behaviour

Navigational behavior is analyzed mainly in two ways:

- Data Mining Analysis
- Statistical Analysis

Demographic Manager

Demographic or demographic profile is a term used in marketing and broadcasting, to describe a demographic grouping or a market segment. This typically involves age bands, social class bands and gender. This manager deals with the demographic patterns, item ranking and display according to the patterns.



Fig. 2: Demographic Manager

Suggest Demographic Patterns

The system starts with selling of open source software online. The company size and revenue of the customer is a very important criteria in segmenting this type of customers.

Execute Demographic suggestions

The navigational behavior is being controlled by the demographic group in which the customer is grouped. In prominent places, the category of products suiting his demographic profile will be displayed. In less prominent places, other choices are displayed. This type of display behavior is beneficial for both customer and the site owner.

Record Navigational Behavior

The navigational behavior is primarily captured in log file. The astTECSlog table described in the database section is the key to the recording of this navigational behavior.

Analyze Navigational Behavior

The navigational behavior is analyzed to see, if the customer is behaving rationally corresponding to his demographic profile. In case, he varies very much from the normal behavior, his rating is changed in the upward/downward direction.

New Product Manager

Most of the policy managers have the initial value suggestions for their own modules. Anyhow, certain default values has to be allocated for each of these modules to start being active. The initial values for each of the modules are defined and also any level of

initialization is done by this module.

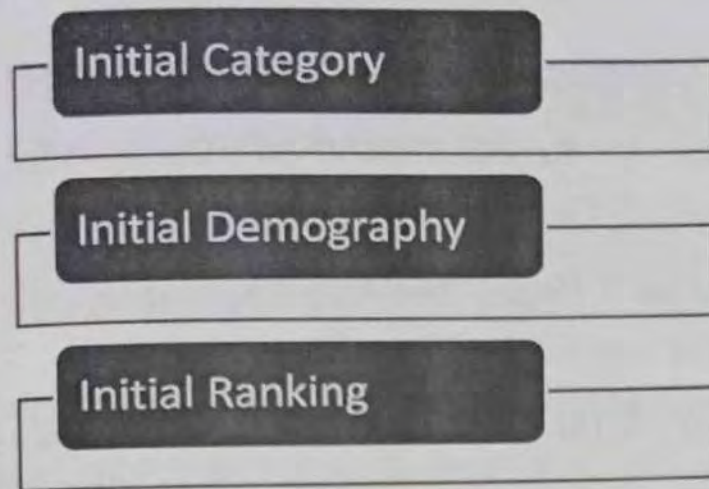


Fig. 3: New Product Manager

Conclusion

Even after a decade of the launch of the Autonomous system manifesto, though we have a good understanding of what autonomic systems should look like, are nowhere near developing and deploying such systems on a wide scale. This paper attempted to apply autonomic principles to the very dynamic area of online retail management.

Acknowledgment

I am grateful to **Mr. Devasia Kurian**, Managing Director of iTECS Communications Pvt. Ltd. for providing such a nice work environment. I am also thankful to **Ms. Reshma Joby**, Senior Software Engineer at iTECS Communications Pvt. Ltd. for her help.

I would also like to express my heartfelt gratitude for the sincere prayers and encouragement offered by sisters of my Convent. I am also very thankful to my parents and family members.

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MALAYALEE BEGGARS - A DILEMMA FOR KERALA SOCIETY

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Associated with the problems of poverty and unemployment is the problem of beggary which is a social problem of great magnitude and grave concern in developing countries. Begging is a problem for society in as much as a large number of beggars means non utilization of available human resources and drag upon the existing resources of the society. According to a recent survey by Delhi School of Social Work there has been a phenomenal increase in the numbers of beggars in India. The biggest problem lies in the changing attitude towards beggars. Giving alms to the needy was built into the social fabric. But the recent trend in Kerala shows a different picture of beggary, the one which made the people to beg without any hesitation.

Methodology

Statement of the problem

Beggary may be regarded as one of the myriad ways in which social deviation manifests itself primarily in a backward or what is now designated as developing economy. Beggary is a major social problem in India. Beggary is a symptom of personal as well as social disorganization. Begging has become a profession in the modern society. It is most profitable business which no needs

investment and hard work. This profitable nature of Beggary encourages healthy people to beg. Normally Keralites are considered to be more prestigious. But now the trend has changed to beg anything at any cost. According to the informal studies conducted by the child line officials in Kerala, a whopping Rs.42 crores of money per year is dumped down the drains, by way of giving alms to beggars, who throng the towns of god's on country. In the capital of Kerala some 800 beggars collect a measly sum of Rs.9 crores per year. Malayalee beggars - a dilemma for Kerala society is a modest attempt to investigate the various aspects of the life of malayalee beggars.

Objective of the Study

To analyze the recent trends among malayalee Beggars in rural areas.

Variables

In this study the researcher used the independent variables like age, sex, category, religion and education and the dependent variables are income, mode of beggary, willing to work etc

Sampling Method; Convenience or accidental sampling.

This is a non probability sampling. It means selecting sample units in a just 'hit and miss' fashion, that means, interviewing people whom we happen to meet.

Tools of Data Collection; Interview schedule.

Limitations of the Study

Absence of openness of the respondents.

Analysis

Beggars are mainly the wandering people and they never stay in their home. But in the case of Kerala, beggars mainly stay in their own family.

The following tables reveals the new trends among malayalee beggars Distribution of respondents based on staying in family

Yes	No	Total
29	11	40
72.5%	27.5%	100%

The majority respondents live with family. Most of the family members support their 'profession'. But they have less interest to contact with their relatives. 55% of the respondents revealed that they had been doing this for more than 10 years. Only 10% of respondents were locals and others from the different districts in Kerala.

Sex wise distribution & Area of beggary

Area Sex	Market and Bus stand	Rural area	Shops	Total
Male	3(12.5%)	17(70.8%)	4(16.6%)	24(100%)
female	0	8(50%)	8(50%)	16(100%)
Total	3(7.5%)	25(62.5%)	12(30%)	40(100%)

63% beggars were concentrated on rural areas. 30% of them concentrated different shops and others in market and bus stand. They consider the rural places are more comfortable because of the economic benefits and these places are less restricted areas. 80% beggars spent all days for beggary and rest of them were part time beggars.

Mode of beggary

Sl.No	Mode of beggary	Number of respondents
1	With instrumental support	4(10%)
2	Exhibiting wounds	20(50%)
3	Printed matters	7(17.5%)
4	Asking alms	9(22.5%)
Total		40(100%)

Several mode of beggary that adopted by the beggars were found out by the researcher. Disabled beggars adopted the mode of exhibiting their disabilities. Some able bodied persons and aged beggars were distributing the printed materials explaining their tragedies and miserable experiences and asks alms and receives the things like money, cloths, food etc

Savings

Yes	No	total
12	28	40
30%	70%	100%

70% of the respondents have no personal savings. Most of them merely spend their money. They were not aware of personal savings.

Sex and Causes of beggary

causes sex	Economical	Biological	Other reasons	Total
male	14(58.3%)	8(33%)	2(8.3%)	24(60%)
female	10(62.5%)	3(18.75%)	3(18.75%)	16(40%)
total	24(60%)	11(27.5%)	5(12.5%)	40(100%)

60% of respondents were of the opinion that the main cause behind beggary is economical. 27.5% of respondents said that they accept beggary as a way of livelihood due to biological reasons. Other reasons mainly due to education of children, marriage of daughters, treatment of family members etc.

Beggars and their Deviant habits

Deviant habits Category	Use of tobacco Or pan chewing	Smoking	Drug abuse	total
Child beggars	2	---	---	2(7.14%)
Able bodied	3	2	1	6(21.4%)
disabled	4	1	6	11(39.8%)
others	---	6	3	9(32.1%)
Total	9(32.14%)	9(32.14%)	10(35.71%)	28(100%)

Around 35% respondents have drinking habits. And 32% of the respondents have smoking habits and rest of them have pan chewing or tobacco chewing habits. These deviant habits make them economically backward and socially dreadful. Among the respondents who have deviant habits are 28 (70%).36% are alcohol addicts. In the alcohol addicts a majority of 60 % are disabled beggars. Among the tobacco using respondents above 20%are child beggars.

The following table shows the various sources of food for beggars.

Source of food and Category

Source of food Category	Hotels	Self cooking	Beggary	Total
Child beggars	2 (50%)	---	2 (50%)	4 (100%)
Able bodied	4 (57.22%)	1 (14.2%)	2 (28.57%)	7 (100%)
disabled	11 (55%)	3 (15%)	6 (30%)	20 (100%)
others	5 (55%)	2 (22.22%)	2 (22.22%)	9 (100%)
Total	22 (55%)	6 (15%)	12 (30%)	40 (100%)

This table shows that there were various sources to get food for beggars. 55% of the respondents said that they buy food from small tea shops. 30% of them were received food by beggary and rest of them prepare themselves. Type of food varied from one to another. 55% of respondents having rice and others take chapathi, uppuma etc.

Kerala is the big tourism state in the country. Many tourists not only from different parts of our country but also many foreigners are used to visit Kerala normally. A person who avoid to work and wants to earn their livings in easy way are adapting to begging. In Kerala, the beggars are increasing daily in order to earn money from the foreign and other tourists. Kerala being a well educated state, increasing of beggary will be shameful act on the government. So Government should take an immediate action to stop beggary.

Literacy and Willingness to work

Literacy	Willingness to work		Total
	Willing	Not willing	
Literate	15 (100%)	---	15 (100%)
Illiterate	6 (24%)	19 (76%)	25 (100%)
Total	2 (52.5%)	19 (47.5%)	40 (100%)

This table reveals that out of total respondents 25 of them are illiterate. 19% of the illiterate respondents are not ready to work. 15 respondents were literate and all of them are ready to work. This shows that illiteracy is one of the important factors for their laziness. These lazy people have no interest to get rid from beggary.

Major Findings

- Majority of them(70%) were accepted beggary as a profession
- 73% stay in family
- Main source of income is beggary
- No personal savings (73%)
- Some have mobile phone (18%)
- Spend their money for daily livelihood
- Daily income(above 200) encourages to continue this profession

- Reasons are economical (60%), social (12.5%) and biological (27.5%)
- Able bodied consider this as a profitable business
- Rural areas (63%) very comfortable places for beggary
- Deviant habits like using pan and tobacco chewing (32.14%), smoking (32.14%), drug abuses (35.71%)
- A problem to the society
- People considered them as public nuisance
- Illiterate beggars (76%) do not ready to work, showing their laziness
- Don't want change situations
- Social conditions favour beggary
- No idea(63%) about prohibition act of beggary
- Rural people more charitable towards beggars
- Exploit the favourable condition
- Not a simple problem
- Need social legislations and welfare programmes

Suggestions

- Comprehensive social security measures
- Counteracting the influence of poverty
- Care of orphans and handicapped

- Creation of public opinion and collection funds by new methods
- Income generating vocational training should be provided
- To create more rehabilitation centers
- Uniform Law in all states

Conclusion

In Kerala, malayalee beggars are a great dilemma because it is a situation that requires a choice between options that are equally unfavorable or mutually exclusive. Actually they are an agony and headache for the nation. Their savagery nature and indignity create distress to them. They have no entry to the main stream of the society. But we never imprecate them. So we need foresight for their future in all our plannings.

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PRO-OXIDANT ACTIVITY OF TiO₂ ON WEATHERING AND BIODEGRADATION OF LLDPE-PVA BLENDS

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ABSTRACT

In this work we have investigated the effect of titanium dioxide and vegetable oil either acting alone or in combination on the degradation behaviour of LLDPE/PVA blends. The weathering performance of two commercial crystalline forms of TiO₂ (rutile and anatase) in commercial polyethylene in the absence as well as presence of vegetable oil is also examined. The extent of degradation was then monitored by physical property measurements, FTIR spectra and scanning electron micrographs.

Key words: *Weathering, Biodegradation, Polyethylene, Pro-oxidant*

1 Introduction

Due to favourable characteristics such as inexpensiveness, nontoxicity, stability and high photoactivity, TiO₂ has become an excellent choice for a photocatalyst [1,2]. As photocatalysts, rutile and anatase phases of TiO₂ have also been investigated. TiO₂ in polyolefins has been studied extensively because of its wide use [3-5]. Polyethylene is a material used in large amounts for packaging because of its relatively low cost, versatile properties including high tensile strength, elongation at break, good barrier properties against water-borne organisms, higher energy effectiveness, light weight and good water resistance [6]. Polyethylene of enhanced

environmental degradability is prepared by blending with biodegradable additives, photo-initiators or by copolymerization. Incorporation of pro-oxidant additives is a promising step to overcome the environmental degradation by polyethylene films. Pro-oxidants accelerate photo oxidation and consequent polymer chain cleavage rendering the product more susceptible to biodegradation.

In this work the pro-oxidant activity of TiO_2 in the weathering of biodegradable LLDPE-PVA blend is investigated in the presence as well as absence of vegetable oil. The degradation due to weathering was monitored by various techniques like physical property measurements, FTIR spectroscopy, and scanning electron microscope (SEM) for surface morphology. Biodegradation of the weathered samples were then carried out in marine benthic environments using *Vibrio species*.

2 Experimental

2.1 Materials

General purpose film grade LLDPE (LL20FS010) used in this study was supplied by Reliance Industries Ltd, Mumbai, India. It has a melt-flow index of 1g/10min at 190°C and 2.16kg load. The density of the LLDPE sample is 0.920g/cm^3 . Hot water soluble polyvinyl alcohol used in this study was industrial grade obtained from Rolex Chemical Industries, Mumbai. Molecular formula is $(\text{C}_4\text{H}_{10}\text{O})_n$; viscosity at 4% concentration in water at 20°C is 3mPa.s. TiO_2 was purchased from M/S Travancore Titanium Products, Thiruvananthapuram.

2.2 Sample preparation

Blending was carried out at 185°C in a Thermo HAAKE Polylab internal mixer equipped with a pair of roller rotors. The rotor speed

was maintained at 50rpm. Varying amounts of commercial rutile and anatase forms of TiO_2 (0.25%-1% w/w) were added to LLDPE-PVA blends during mixing. Blends containing different proportions of LLDPE, PVA and metal oxides were compression molded into sheets to form thin films. Molded samples, cut into strips according to ASTM D882, were used for all the tests. The details of film samples prepared along with their designation are presented in Table 1. LLDPE-PVA (L0 = LLDPE containing 10% PVA) blends containing glycerol alone have been designated as F and those containing both glycerol and vegetable oil as FV. Samples containing additionally anatase and rutile have been designated as FVA and FVR respectively, the numerical suffix indicating the % concentration of the oxide additive.

L10 + Glycerol = F

L10 + Glycerol + Veg. Oil = FV

L10 + Glycerol + Veg. Oil + Rutile = FVR

L10 + Glycerol + Veg. Oil + Anatase = FVA

L10 + Glycerol + Rutile = FR

L10 + Glycerol + Anatase = FA

Table 1: Details of formulations and their sample designation

Sample designation	LLDPE (g)	PVA (g)	Glycerol (g)	Vegetable oil (g)	TiO_2 (g)
F	45	4.5	0.675	—	—
FV	45	4.5	0.675	0.45	—
FVA-0.25	45	4.5	0.675	0.45	0.1125
FVA-0.50	45	4.5	0.675	0.45	0.225
FVA-0.75	45	4.5	0.675	0.45	0.3375
FVA-1	45	4.5	0.675	0.45	0.45
FA-0.50	45	4.5	0.675	—	0.225
FVR-0.25	45	4.5	0.675	0.45	0.1125
FVR-0.50	45	4.5	0.675	0.45	0.225
FVR-0.75	45	4.5	0.675	0.45	0.3375
FVR-1	45	4.5	0.675	0.45	0.45
FR-0.50	45	4.5	0.675	—	0.225

2.3 Natural weathering procedure

Polyethylene films were mounted on racks at an angle of 30-45° facing the south direction as per ASTM D 1435-99 [9]. These experiments were started in the month of May 2010 in Kochi (Kerala, India) and continued for 600 hours. Samples after weathering were retrieved at regular intervals of 120, 240, 360, 480, and 600 hours, respectively, to evaluate the effect of weathering time on degradation. Average relative humidity in the atmosphere was 70% and the average temperature was 33°C. The weathered samples were then subjected to biodegradation studies.

2.4 Biodegradation in culture medium

Biodegradation of the samples were carried out using a consortium consisting of four PVA degrading *Vibrio sp.* isolated from benthic marine environment, according to ASTM D 5247-92. Bacterial cultures isolated from sediment samples collected from different locations of Cochin back waters and Mangalavanam mangroves, identified as genus *Vibrio* and maintained in the culture collections of Microbial Genetic Lab, Dept. of Biotechnology, Cochin University of Science and Technology were utilized in this study.

2.5 Evaluation of extent of degradation

Samples with a gauge length of 100 mm and width of 10 mm were cut from the films for tensile strength measurements as per ASTM 882-85. Six samples were tested for each experiment and the average value was taken. Structural changes upon exposure were investigated using FTIR spectroscopy. FTIR spectra were recorded at regular intervals using a Thermo Nicolet (Avatar 370) spectrophotometer in the spectral region between 4000 and 400cm⁻¹.

For each sample a total of 32 scans were averaged at a resolution of 4 cm^{-1} . Scanning electron microscopy was performed on the samples before and after degradation to investigate the changes in the morphology due to weathering. Sample surfaces were sputtered with gold using usual techniques and then analyzed in a JEOL (JSM-6390LV) electron microscope.

3 Results and Discussion

3.1 Mechanical Properties

The mechanism of the transition metal catalyzed degradation of PE has been described in the literature as a free radical chain mechanism proceeding from the formation of hydro peroxides along the polymer backbone through reaction of the polymer with molecular oxygen [8,9]. Figures 1 & 2 represent the effect of exposure time on the tensile strength of LLDPE-PVA blends containing anatase and rutile after weathering and biodegradation.

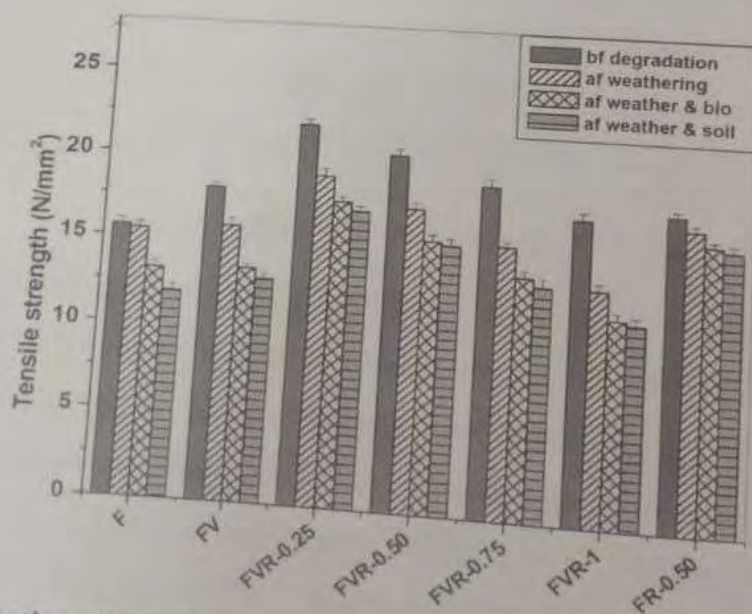


Fig.1: Variation of tensile strength of blends with the addition of varying amounts of commercial rutile

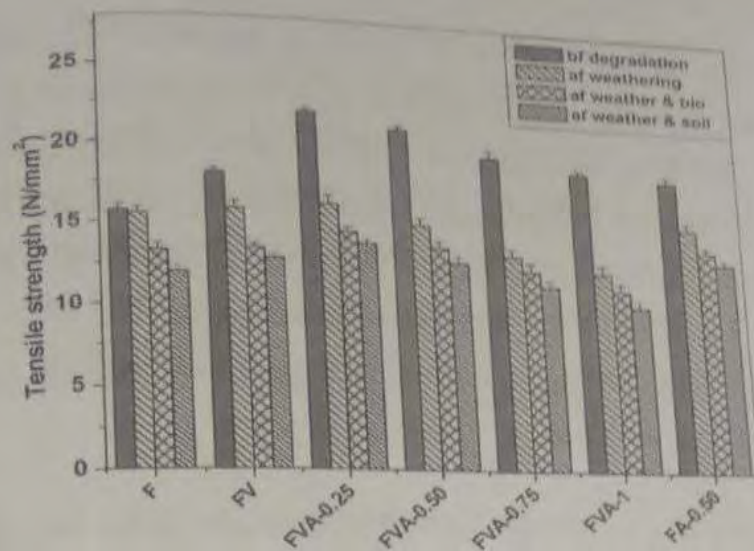


Fig.2: Variation of tensile strength of blends with the addition of varying amounts of commercial anatase

On weathering of the blends containing only TiO_2 , reduction in tensile properties was observed in the case of samples containing both rutile and anatase. For the case of 0.50% of TiO_2 only, the tensile strength decreased by 4.28% for samples containing rutile (FR-0.50) and 16.42% for anatase (FA-0.50) after 600 hours of weathering. Although both forms of TiO_2 (rutile and anatase) played a significant role in promoting the photo-oxidative degradation of LLDPE films the decrease is greatest in the case of samples containing anatase pigment.

The samples containing a mixture of vegetable oil and TiO_2 showed considerable decrease in tensile strength during outdoor exposure. The stiffness and brittleness of the materials increased considerably within a month of exposure time. We can see that there is a continued decrease in tensile strength after biodegradation and soil degradation also. This effect is also more in the case of samples containing both TiO_2 and vegetable oil.

For the case of 0.50% of TiO_2 and vegetable oil, the tensile strength decreased by 15.03% for samples containing rutile (FVR-0.50) and 28.36% for anatase (FVA-0.50) which means that vegetable oil played a significant role in the degradation of LLDPE. Vegetable oil undergoes auto-oxidation by which free radicals are generated. These, in turn, initiate oxidation of LLDPE. The % decrease in tensile strength of the blends after weathering is shown in Table 2.

Table 2: Percentage decrease in tensile strength of the samples after weathering

Sample designation	Tensile strength (N/mm^2)		
	Before weathering	After weathering	% decrease
F	15.63	15.45	1.15
FV	18.03	15.79	12.42
FVR-0.25	21.97	18.98	13.61
FVR-0.50	20.42	17.35	15.03
FVR-0.75	18.89	15.45	18.21
FVR-1	17.25	13.27	23.07
FR-0.50	17.74	16.98	4.28
FVA-0.25	22.04	16.25	26.27
FVA-0.50	21.19	15.18	28.36
FVA-0.75	19.67	13.45	31.62
FVA-1	18.90	12.54	33.65
FA-0.50	18.63	15.57	16.42
FVN-0.25	21.5	14.32	33.39
FVN-0.50	21.9	13.6	37.89
FVN-0.75	21.1	12.9	38.86
FVN-1	22.3	12.4	44.39
FN-0.50	21.2	16.43	22.5

3.2 FTIR Studies

The FTIR spectrum of LLDPE/PVA blends (F) containing 0.50% of anatase (A) and rutile (R) before and after 600 hours of weathering in the presence as well as absence of vegetable oil are shown in Figure 3 to 6 respectively

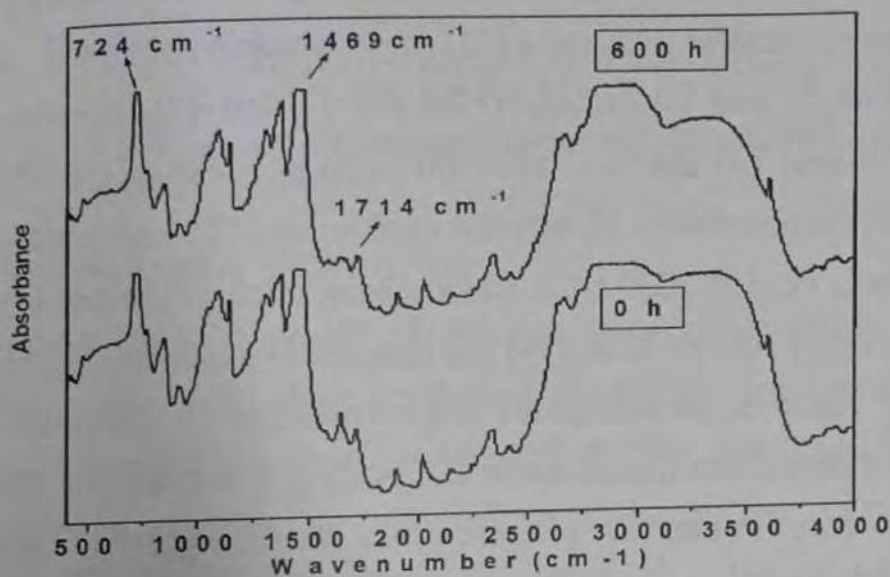


Fig. 3: FTIR spectra of samples containing 0.50% of rutile only

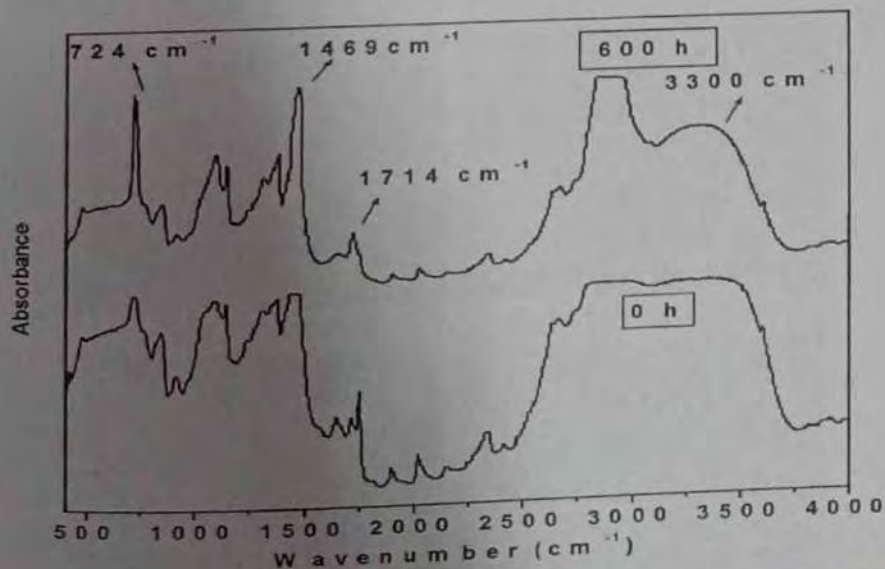


Fig. 4: FTIR spectra of samples containing vegetable oil and 0.50% of rutile

From the figures it can be seen that the absorption band around 1714 cm^{-1} which can be assigned to the C=O stretching vibration of a keto group, grows in intensity with extended outdoor exposure. A broadening of the band at this point indicates the formation of more than one oxidation product. Hence these carbonyl bands can be assigned to C=O stretching vibrations arising from aldehydes and/or esters (1733 cm^{-1}), carboxylic acid groups (1700 cm^{-1}) and γ -lactones (1780 cm^{-1}) [10–13]. The absorption band around 720 cm^{-1} and 1469 cm^{-1} also increases in intensity. The ratio of the absorbance of carbonyl band around 1714 cm^{-1} and internal thickness band at 2020 cm^{-1} , which characterize the degree of photo-oxidation of polyethylene, [14] has been used to calculate the carbonyl index. These bands correspond to the characteristic absorption of the crystalline and amorphous bands and bending vibrations of C-H bonds. The increase in intensity of these peaks was owing to the fracture of the polyethylene chain in degradable environments. Increase in intensity is maximum in the case samples containing both anatase and vegetable oil.

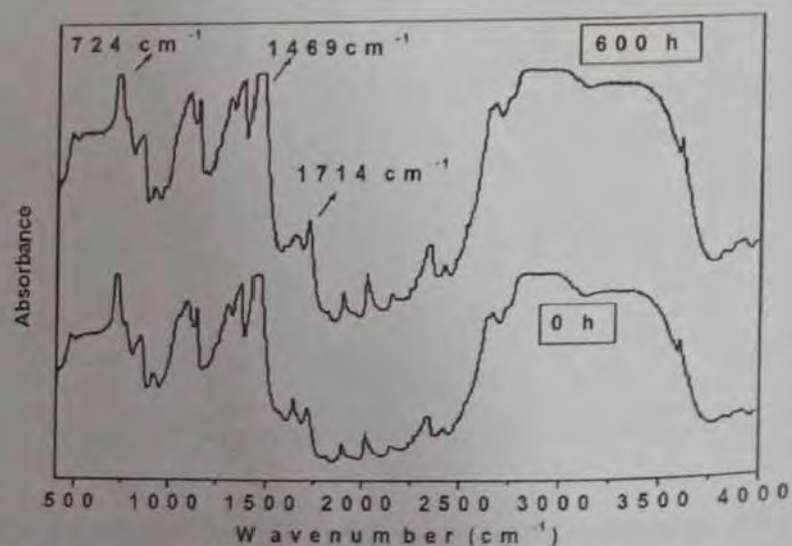


Fig. 5: FTIR spectra of samples containing 0.50% of anatase only

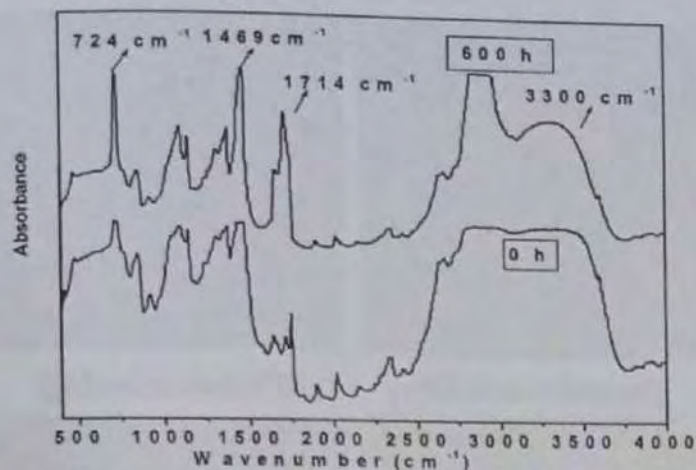


Fig.6: FTIR spectra of samples containing vegetable oil and 0.50% of anatase

3.3 Morphological Studies

The SEM micrographs of the samples after weathering are shown in figures 7-10. After weathering, the samples containing pro-oxidants appear to have numerous cracks. On subsequent biodegradation cavities are seen all over the surface indicating microbial activity. This is especially so in the case of samples containing anatase and vegetable oil.

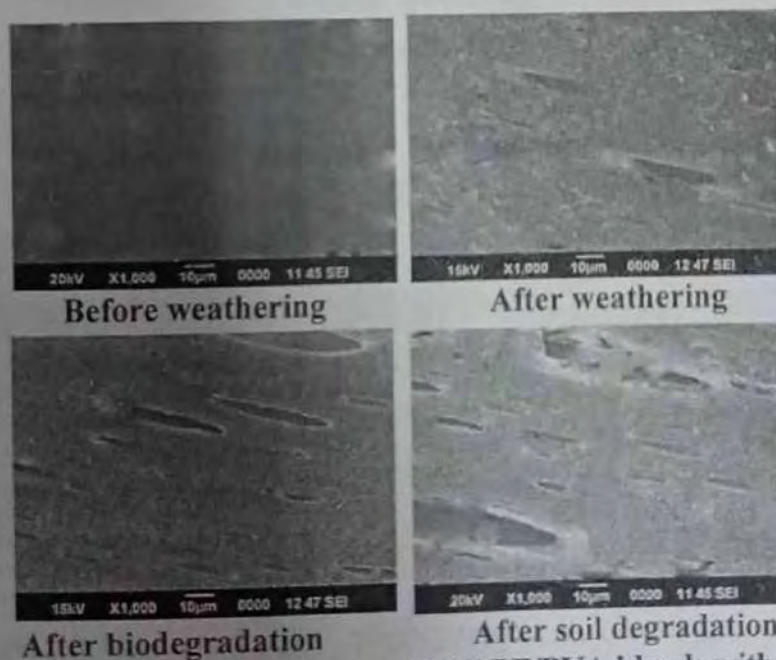


Fig. 7 Scanning electron micrographs of LLDPE/PVA blends with rutile only

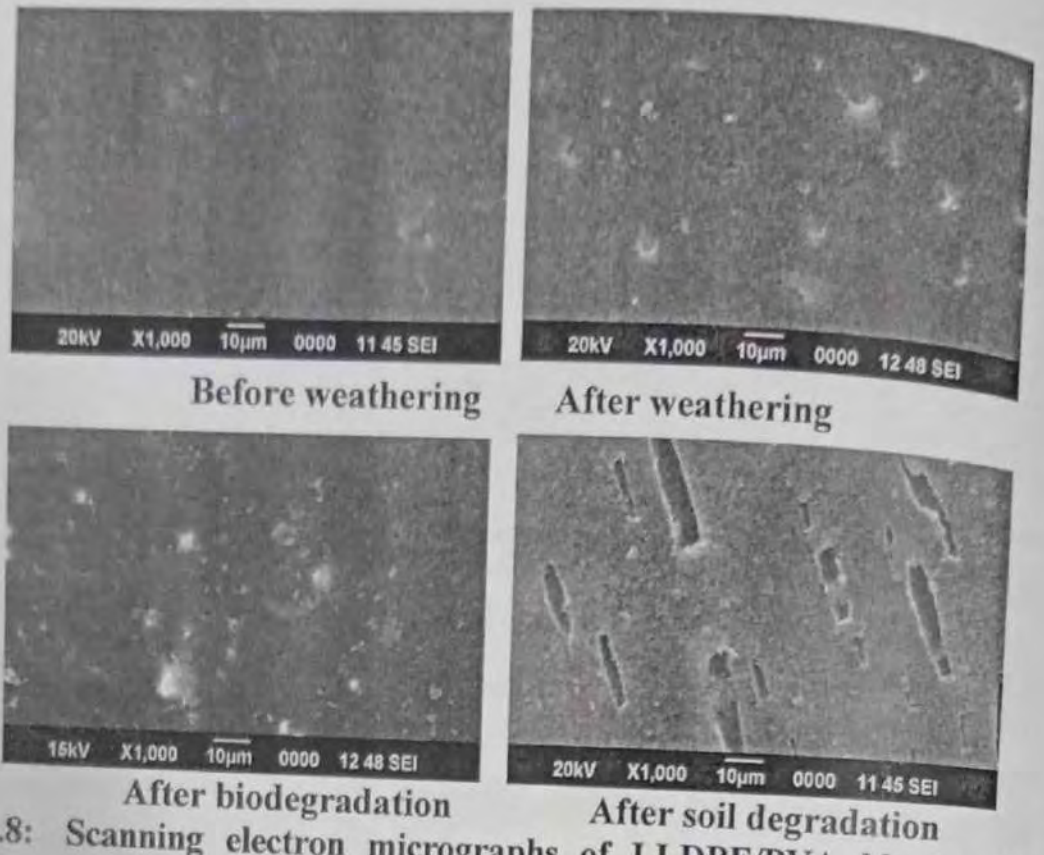


Fig.8: Scanning electron micrographs of LLDPE/PVA blends with rutile and vegetable oil

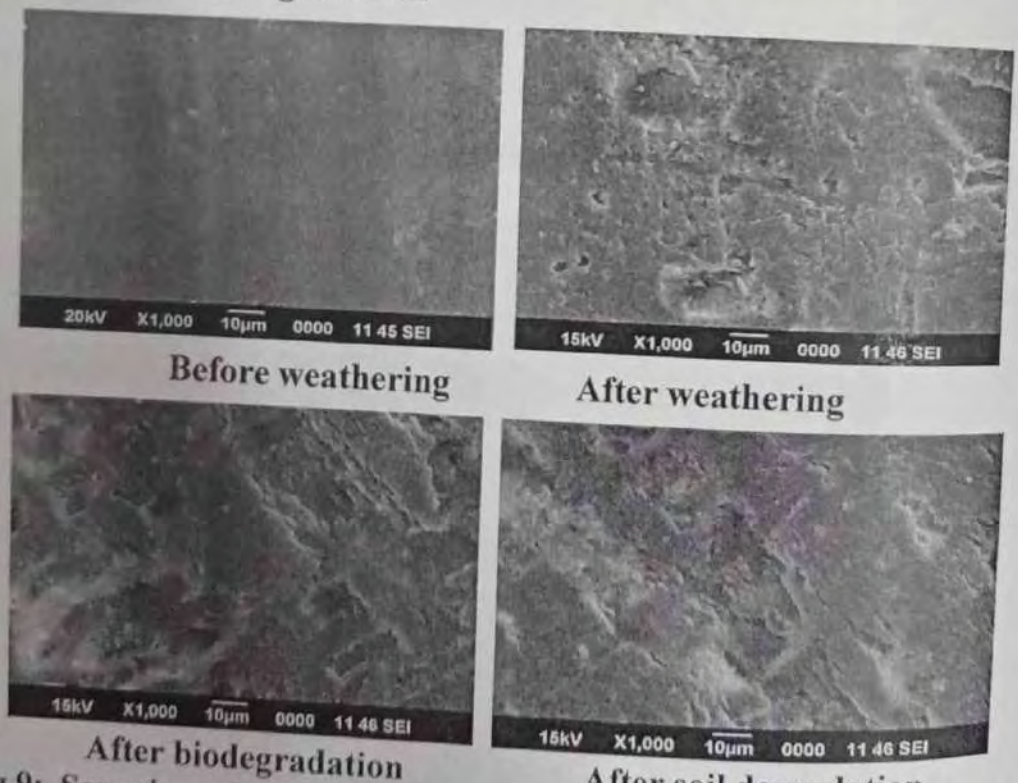


Fig.9: Scanning electron micrographs of LLDPE/PVA blends with anatase only

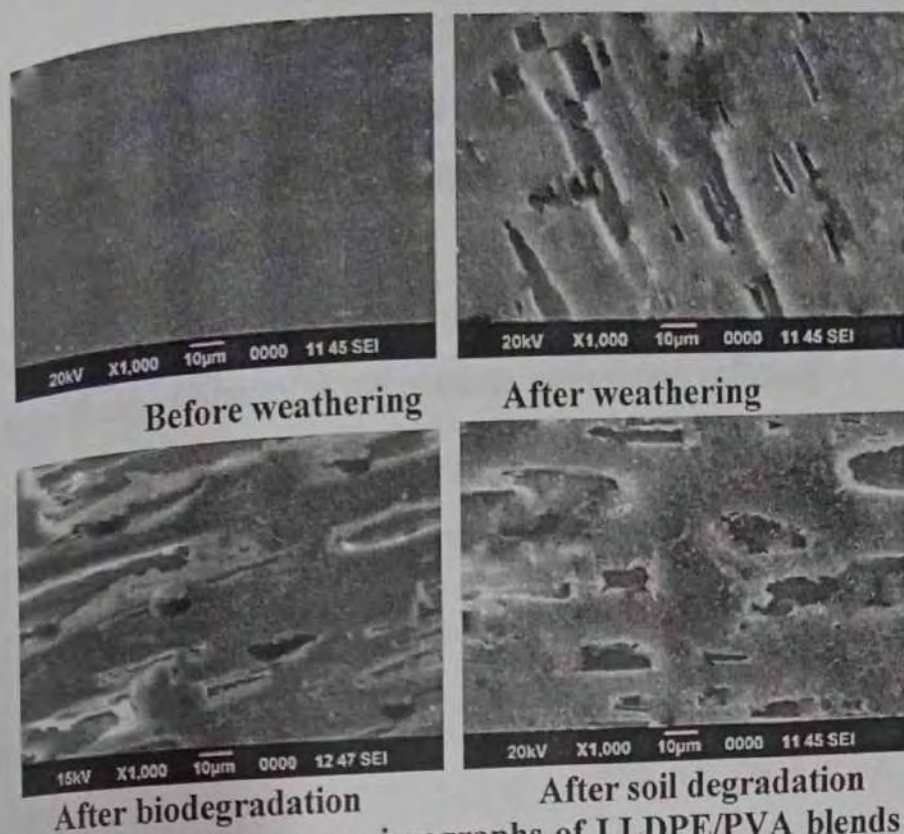


Fig. 10: Scanning electron micrographs of LLDPE/PVA blends with anatase and vegetable oil

Examination of the micrographs shows numerous holes in the film which scatter light and cause whitening. This indicates that in the vicinity of the titania the polymer gets totally degraded to water and carbon dioxide or other volatile substances. Loss of pigment particles from degraded polymers containing titania has been attributed to erosion of the polymer due to photocatalysis [15].

4 Conclusions

- The incorporation of TiO_2 as the key pro-degradant has increased the rate weathering
- Vegetable oil is also capable of accelerating the oxidation of LLDPE/PVA blends during weathering.

- A greater extent of oxidation was observed during weathering, primarily due to TiO₂, in the case of compositions containing a combination of TiO₂ and vegetable oil.
- The pro-oxidant activity is maximum in the case of samples containing anatase particles and vegetable oil.
- The pores seen in scanning electron micrographs are an indication of degradation

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STUDY OF ANGIOSPERM VEGETATION DURING SUMMER SEASON IN A SELECTED WETLAND AT MALA, THRISSUR DISTRICT

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ABSTRACT

A study was conducted to find out the diversity of angiosperm vegetation during summer season in the selected wetland at Mala, Thrissur. For this several field trips were conducted in this area and materials collected for identification. A total number of 36 taxa comes under 18 families were recorded. Out of these families poaceae shows more number of plants with 8 species. A RED listed plant Lindernia crustacean, member of scrophulariaceae was also identified.

Key words: *angiosperm, vegetation, wetland*

Introduction

Wetlands are amongst the Earth's most productive ecosystems. They have been described as 'the kidneys of the landscape', because of the functions they perform in the hydrological and chemical cycles, and 'biological supermarkets' because of the extensive food webs and rich biodiversity they support (Bush 2005). Wetland systems directly support millions of people and provide goods and services to the world outside the wetland. People use the wetland soils for agriculture they catch wetland fish to eat they cut wetland trees for timber and fuel wood and wetland reeds to make mats and to thatch roofs. Direct use may also take the form of recreation, such as bird watching or sailing, or scientific study. Peat soils have preserved ancient remains of people and track ways which are of great interest to archeologists. Wetlands are some of the most spectacular, most

beautiful, tranquil place on earth. It is one of the most undervalued ecosystems but provide a range of vital services. Wetlands are one of the kidneys of earth. It absorbs heavy rain releasing water gradually so, flooding is reduced and helps to store water and increase underground water level (Dennis 2001).

Wetland is one of the world's most important environment assets, containing a disproportionately high number of plant and animal species compared to other areas of the world. Many of our endangered plants and animal species depend to totally on wetland and they specially adapted to live in wet places. Wetlands are highly useful to us in many ways, significantly to global economy in terms of water supply, fisheries, agriculture etc. As water moves into a wetland the flow rate decreases allowing particles to settle out. Plant surface provide for filtration, absorption of solids and add oxygen to the water growing plants remove nutrients and play a cleansing role that protect the downstream environment (Schuyt 2004).

Materials and Methods

The study area is a selected wetland in Mala, Thrissur Dist. It is an area possesses lots of angiosperms. An extensive field survey of the study area was carried out from February 2015 to May 2015 for listing the plants. Most of the wetland area was covered with grasses. Collected specimens were identified with the help of Flora of the Presidency of Madras [1],[2]&[3], The Flora of Tamil Nadu, India, Flowering plants of Thrissur Forests [15], Biodiversity documentation for Kerala. part 6: Flowering plants [16].

Results & Discussion

There is no studies carried out on wetland Angiosperm diversity in Thrissur District. Besides frequent field visits and observations, many

wetland angiosperms could be identified. Different varieties of angiosperms can be seen in this area. *Lindernia crustacea* is a RED listed plant is also seen in this area. Monocots are most prominent than dicots. Most prominent plant species seen in this area are from the Poaceae family. The present study records 36 taxa comprising 31 genera of 18 families of flowering plants. In which more diversity is seen in the family poaceae. The details of identified plants are given below:-

Table 1

Name of the plant	Family
<i>Lindernia rotundifolia</i> (L.) Alston	Scrophulariaceae
<i>Lindernia crustacea</i> (L.) F. Muell.	Scrophulariaceae
<i>Fimbristylis miliacea</i> [L.] Vahl.	Cyperaceae
<i>Fimbristylis ferugiana</i> [L.] Vahl.	Cyperaceae
<i>Ludwigia adscendens</i> [L.] Hara.	Onagraceae
<i>Ludwigia parvifolia</i> Roxb.	Onagraceae
<i>Mullugo oppositifolia</i> L.	Isoaceae
<i>Eragrostis amabilis</i> (L.) Hook & Arnott	Poaceae
<i>Cyperus haspan</i> L.	Cyperaceae
<i>Alternanthera philoxeroides</i> (Mart.) Griseb	Amaranthaceae
<i>Leptochloa chinensis</i> L.	Poaceae
<i>Oldenlandia corimbosa</i> L.	Rubiaceae
<i>Allopteropsis cimicina</i>	Poaceae
<i>Panicum repens</i>	Poaceae
<i>Echinochloa crus-galli</i>	Poaceae
<i>Echinochloa stagnina</i>	Poaceae
<i>Sacciolepis interrupta</i>	Poaceae
<i>Hygrophilla schullii</i>	Poaceae
<i>Rotala rotundifolia</i>	Acanthaceae
<i>Paspalum scrobiculatum</i>	Lythraceae
<i>Centella asiatica</i>	Poaceae
<i>Colocasia esculenta</i>	Apiaceae
<i>Eichornia crassipes</i>	Araceae
<i>Acorus calamus</i>	Pontederiaceae
<i>Nymphaea stellata</i>	Acoraceae
<i>Nymphoides indica</i>	Nymphaeaceae
<i>Nymphoides hydrophylla</i>	Menyanthaceae
<i>Cabomba caroliana</i>	Menyanthaceae
<i>Limnophylla aquatic</i> Rox.	Cabombaceae
<i>Ipomea aquatica</i>	Scrophulariaceae
<i>Utricularia aurea</i> Lour.	Convolvulaceae
<i>Eleocharis palustris</i> (L.) Roem. & Schult	Lentibulariaceae
<i>Bacopa monnieri</i> (L.) Pennel.	Cyperaceae
<i>Eclipta alba</i> L.	Plantaginaceae
<i>Pandanus fascicularis</i> Lam.	Asteraceae
<i>Cyperus pangorei</i> Rottb.	Pandanaceae
	Cyperaceae

Table 2: These identified plants were treated as family wise

Family	Number of plants
Scrophulariaceae	3
Poaceae	8
Cyperaceae	4
Onagraceae	2
Isoaceae	1
Amaranthaceae	1
Rubiaceae	1
Lythraceae	1
Apiaceae	1
Araceae	1
Pontederaceae	1
Acoraceae	1
Menyanthaceae	2
Nymphaeaceae	1
Cabombaceae	1
Convolvulaceae	1
Lentibulariaceae	1
Acanthaceae	1

The above observations shows a vast varieties of angiosperms seen in this small wetland area. From these observations it is very clear that the family poaceae is most prominent in this area. Diversity of Cyperaceae members are less, compared with poaceae but the number is not less than that of poaceae. Other families are almost equally distributed in the area of study.

Summary and Conclusion

As a result of this study a vast varieties of angiosperm plants could be identified with in this small area of study. These results reveal that the wetlands are the treasures of plant kingdom. From the collected plants eight of them form the family poaceae, this is the most prominent family in this area. Four members each from the families cyperaceae and scrophulariaceae. *Lindernia crustacean* is a member of

scrophulariaceae and is a RED listed plant. All the other families almost equally distributed in this area. The other identified families are onagraceae, isoaceae, amaranthaceae, rubiaceae, acanthaceae, lythraceae, apiaceae, araceae, pontederaceae, acoraceae, nymphaeaceae, menyanthaceae, cabombaceae, convolvulaceae and lentibulariaceae. A wetland is an area with large diversity, and also have great role in protecting the life on earth. So it is a need to conserve it as a treasure.

Acknowledgement

We are grateful to Dr. Jaseentha. M.O, Head of the Dept. of Botany Carmel college Mala and all staffs who provide facilities and support. Extended thanks to the college management to provide this great opportunity.

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EMERGING TREND OF E-COMMERCE IN INDIA

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Electronic commerce is presently an indispensable ingredient of India's trade facilitation policy. As a symbol of globalization, e-commerce represents the cutting edge of success in this digital age and it has changed and is still changing the way business is conducted around the world. The commercialization of the internet has driven electronic commerce to become one of the most capable channels for inter-organizational business processes.

E-Commerce consists primarily of the distributing, buying, selling, marketing and servicing of products or services over electronic system such as the Internet and other computer networks. It can involve electronic funds transfer, supply chain management, e-marketing, online marketing, electronic data interchange (EDI) and automated data collection system. It typically uses electronic communication technology such as the Internet, extranets, e-mail, e-books, data bases and mobile phones.

History of E-Commerce

History of e-commerce provides us important details about how electronic commerce began to be used as a popular online mean of economic exchange.

[1] Electronic Data Interchange (EDI) :-

EDI is the crucial phase in the history of e-commerce. It is invented in 1960's and provided with a "set of standards" that

enabled, the big business firms to indulge in a sort of beneficial electronic transactions.

[2] Mosaic Web-Browser :-

The next important phase is the development of mosaic web-browser in 1992. This web browser was soon given the form of a browser which could be down-loaded and was named as Netscape.

[3] Other Important Developments :-

The development and adaptation of DSL and Red Hat Linux respectively, again benefited the process of online business transactions. The year 2000, saw a major merger between AOL and time Warner which marked another important step towards the development of e-commerce.

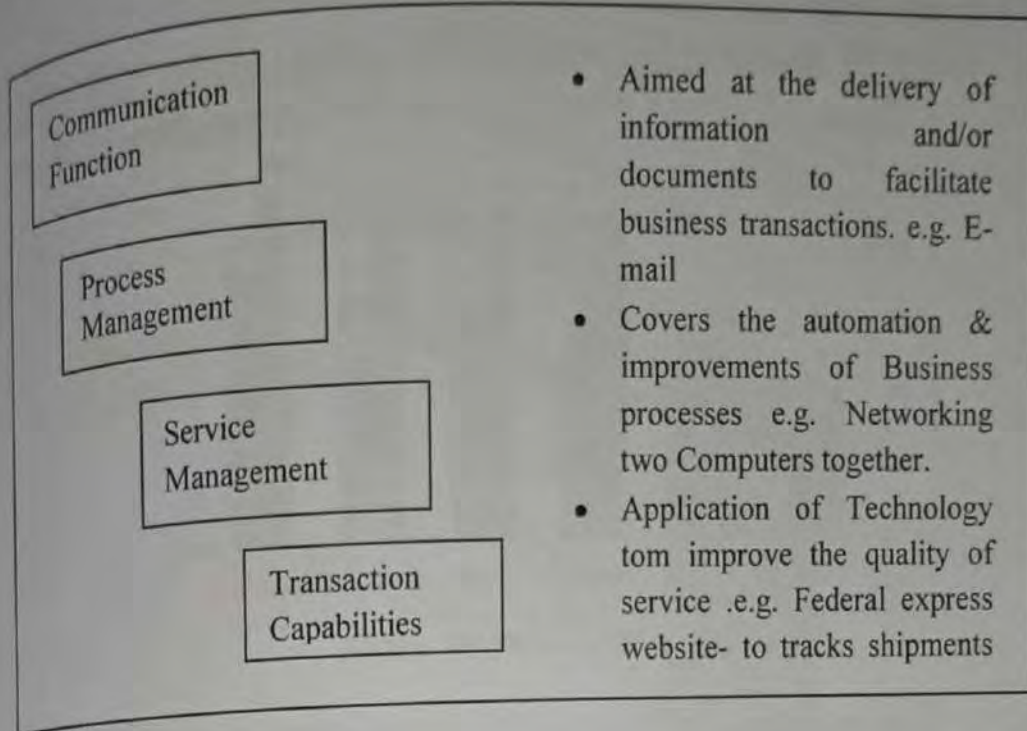
[4] Present Status of E-Commerce :-

The Worldwide popularity of internet has resulted in the development and over whelming acceptance of e-commerce. It provides with a rich online transaction experience.

Functions of Electronic Commerce

The four functions of e-commerce

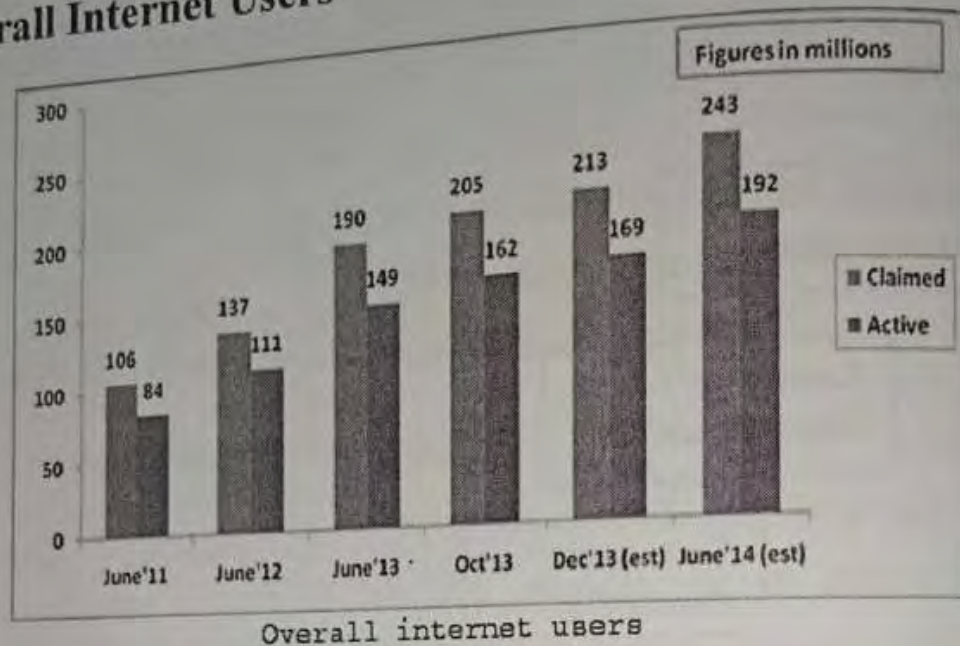
- 1) Communication
- 2) Process management
- 3) Service management
- 4) Transaction capabilities



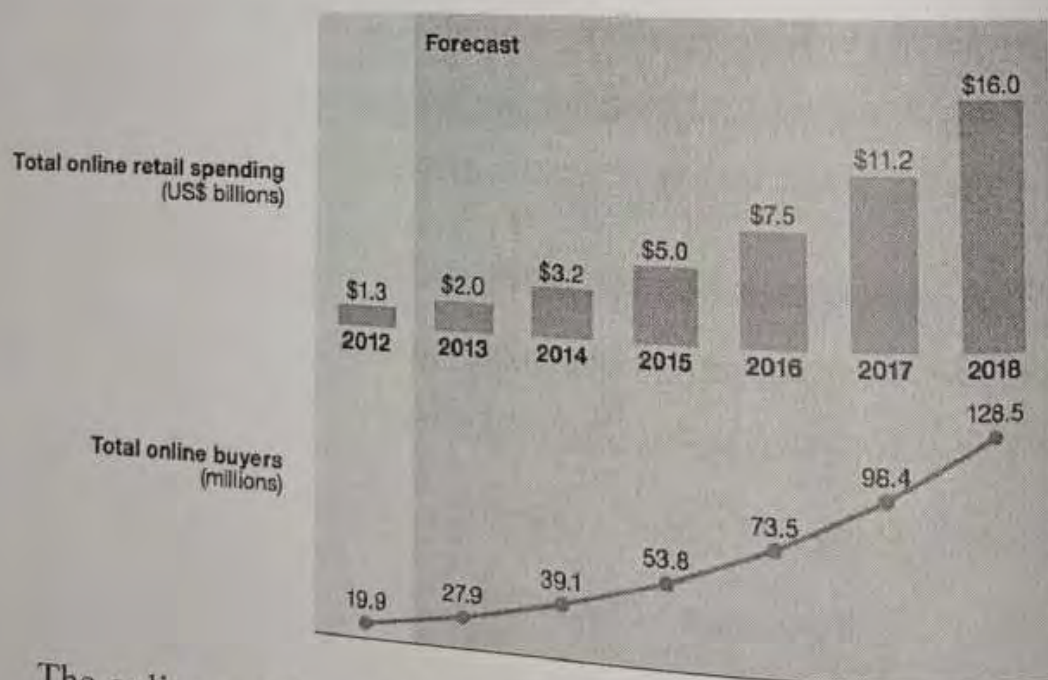
Features of E-Commerce

- 1) No Geographical Boundaries
- 2) Improved market and product analysis
- 3) Low transaction cost.
- 4) Better presentation of goods.
- 5) Comparison is possible.
- 6) World wide availability.
- 7) Reduced paper work.
- 8) Quick order processing.
- 9) Improved customer interaction.
- 10) Equal opportunity to all.

Overall Internet Users

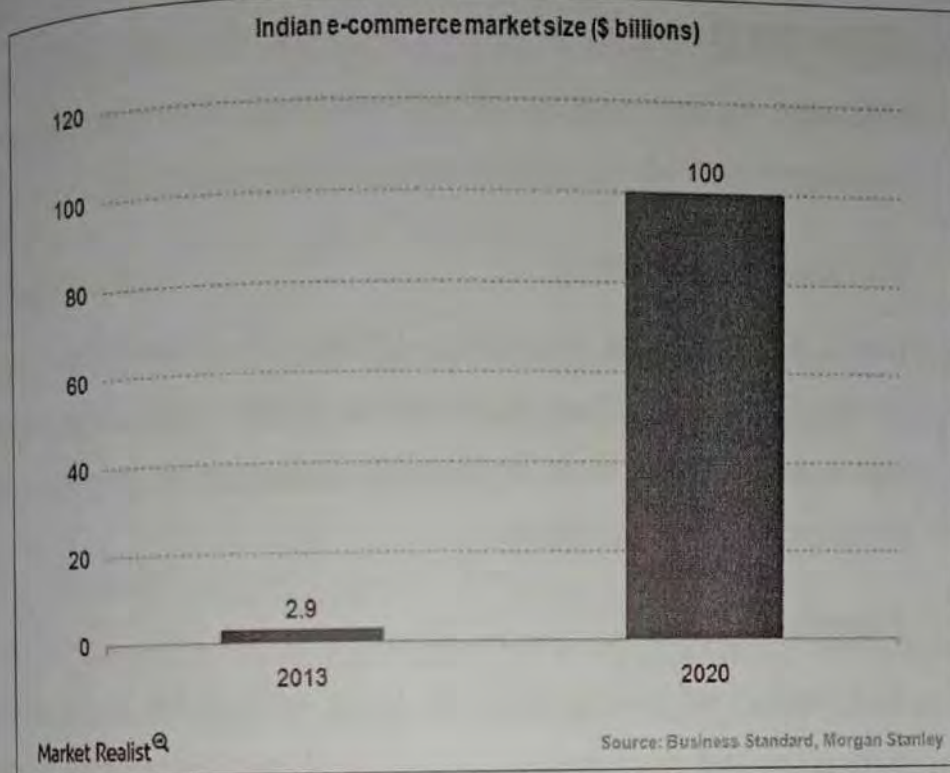


The number of active overall internet users shows an increase from 84 millions to 192 millions. It shows more than 200% increase in the no. of overall internet users.



The online retail spending in India shows high growth rate in the year 2012 it was only \$1.3 billions and it was \$5.0 in the year 2015 and expect a growth of \$16.0 billions in the succeeding years.

The total no. of total online buyers also shows Growth. There is only 19.9 million buyers in the year 2012, it was increased to 53.8 million in 2015.



The market size of Indian E-commerce was 2.9 billions in 2013 and it was expected that it should be increased to \$100 billion in the year 2020.

Impacts, Challenges and Limitations of E -Commerce

Impacts

E-Commerce have impact on many areas of business and disciplines of business management they are

1. Marketing:-

It impacts particularly in direct marketing Telemarketing with the advances in telephone finally developed in to e- marketing

sprawning 'ECRM' (Customer Relationship Management) data mining and the like by creating new channels for direct sales and promotion.

2. **Computer sciences**

Different networking and computing technologies and languages were developed to support e-commerce.

3. **Finance & accounting**

Items like on-line banking; issues of transaction cost; accounting and auditing implications where 'intangible' assets and human capital must be tangibly valued in an increasingly knowledge based economy.

4. **Economies ;-**

The impact of e-commerce on local and global economies; understanding the concepts of a digital and knowledge based economy and how this fits in to economic theory.

5. **Production & Operations Management (Manufacturing) :-**

Web based enterprise resource planning system (ERP) can be used to forward orders directly to production floor within seconds, thus cutting production cycle times up to 50% especially when manufacturing plants, Engineers and Designers are located in different countries.

6. **Management Information Systems(MIS):-**

MIS analysis, designs and implements e-business systems within an organization.

7. **Human Resource Management(HRM)**
HRM takes care of online recruiting.

8. **Business Law and Ethics**
The Different and legal ethical issues such as copy right laws, privacy of customer Information, legality of electronic contracts etc have arisen as a result of e-commerce.

Challenges

E-Commerce posed many threats because of its being what is popularly called faceless and borderless. The following are the issues related to e-commerce.

1. **Privacy**

Privacy has been significant issue of concern for both current and prospective e-commerce customers. Privacy consists of not being interfered with, having the power to exclude; individual privacy is a moral right.

2. **Security**

The Internet offers unprecedented ease of access to a vast array of goods and services. The rapidly expanding arena of "click and mortar" and the largely unregulated Cyberspace medium have however prompted concerns about both privacy and data security.

3. **Disintermediation**

This is a means of eliminating the intermediary such as retailers, wholesalers etc by setting up a website to sell directly to customers. For Example downloading of Music.

Limitations

- Credit card security is a serious issue if vulnerable
- Extensive database and Technical knowledge and experience required.
- Customer apprehension about online credit card orders.
- Constantly changing technology may leave slow business behind.

Conclusion

E-commerce is one of the biggest thing that has taken the business by a storm. It is creating an entire new economy, which has huge potential and is fundamentally changing the way businesses are done. It has advantages for both buyers as well as sellers and this win-win situation is at the core of its phenomenal rise.

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EXOTIC AND INDIGENOUS ELEMENTS IN CHAVITTUNATAKAM

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Chavittunatakam 'A Verarasam highlighted art form, highly related with martial tradition of Kerala. It had beautiful assemblance of dance, music, fights acting etc. A helathy assemblance of eastern and western culture seen in art form. It is true that there are few arts for had like this type of assemblance of different culture and arts. It was emerged in the coastal area of Kerala it considered as a cultural identity of Latin Christians. It was originated by Portuguese missionaries, and they were protected and patronize it in early times. It would help them to these proselytization activities. Indigenous

Early Christian arts in Kerala reflect clearly the society, cultural and political conditions of the contemporary Christian society. The Christian theatrical arts like Chavittunatakam and passion play provide ample example as intendance and evidence to prove this fait. Lots of factors influenced Chavittunatakam. Really Chavittunatakam assembling of different arts and culture. Some exotic and indigenous factor influenced the Chavittunatakam.

The Christian arts in Kerala greatly influenced by the foreign elements from the early days onwards. The style of presentation of the folk dances were mostly India, but Chavittunatakam exhibited a much greater rate of foreign influence in the style of its presentation.

Chavittunatakam with its striking similarities with the European Opera exhibits several European Characteristics. The Karalman natakam (Drama of Charlemagne) which was the so called first Chavittunatakam in Kerala was an emp part of European Renaissance an opinioned by Mrs. Sabeena Raphy. In Europe minstrel used to sing the heroic stories of Charlemagne throughout the houses. Karalman charitham is a story related with Charlemagne or Charls, emperor of Frankish empire later the ruler of holy Roman empire (A D 768-874). But the historical Charlemagne and epical Charlemagne had high distance. The connection of Charlemagne with crusade was a strange factor. It was a deliberate attempt to give a fighting spirit to Christian against Muslim invation. Karalman charitham like Chavittunatakam emphasis heroism and fighting spirit. This story also glorifies the Christianity and European domination. This point to the view that Chavittunatakam was an out come of the European Renaissance.¹

It is to be noted that the theatrical arts in Kerala in an accepted form might have been introduced earlier than the arrival of the Portuguese and were popular among the early Christians settled in the coastal area before the synod of Diamper itself; the people of coastal area due to their incessant contact with the various peoples and cultures of the world, are by their nature receptive of innovation.

The European missionaries with the aim of proselytization and in accerelance with the Decrees of synod of Diamper might have used the European Opera style of drama to give shape to an indigenus drama that would influence the ordinary people. For their, they might have adopted the European stories which were

familiar to them. Most of the scripts of Chavittunatakam contain the heroes of European and it was in the areas under the Portuguese rule that this art form get more fame.

Many features of this Christian art form are European in Origin. The style of the costume selected was intended to match the European style. The actors faces were painted using make-up powder that suited to the texture of the skin of European character. The hair dressing was also done similar to the European people's hair. Dresses were also matching to the European style. The crown of the king, costumes of the king, the queen and the soldiers were all in European model.² Later, when the Indian stories were written Indian types of dress were also used.

Earlier the themes selected were usually European, Eg: story of Karalman or those in Bible like that of David and Goliath. The story of Nepolian and Alexander also became the theme of Chavittunatakam. This may be looked upon as part of attempts towards the Westernization of the Christian Church in Kerala.³

More than the Exotic factors, the indigenous elements have contributed to the development and growth of Christian theatre arts in Kerala. The majority of their component factors are indigenous in nature in other words this art form can be considered as the Christianized version of popular arts in Kerala.

All the Kerala Christian theatrical arts were influenced by the traditional arts of Kerala. Though they were given Christian colour and texture, most of them retained the features of traditional art of Kerala culture.⁴

Chavittunatakam has its roots in ancient dramatic arts of Kerala like Koothu, Koodiyattam, Porottunatakam and others and these art forms might have basically provided with the idea of such a folk play. The make up used in Chavittunatakam, however, seems to be relatively natural and simple than that of these traditional arts forms.

The Keliperukkal before the starting of the drama in clearly an adoption from the traditional style of advertising about the programme. They style of music and system of metric pattern used in this art form in Karnatic style. The different Ragas and Thalas (including Aadi, Roopakam and Tripuda) are used in the songs.⁵ The music instrument like chnda, Maddalam, Elathalam from Kerala, Mridangam and nadaswaram from Tamil Nadu are widely used in Chavittunatakam. These are the indigenous factor is Chavittunatakam.

Apart from this several steps in the performance of Chavittunatakam like Arangetam, Virutham Moolal, Kattiyakkaran's performance polikkal, Mangalam etc.⁶ Have borrowed heavily from several traditional arts forms of Kerala. Polikkal or Polippattu is the singing songs for collecting prize money from the audience and this forms an important part of the stage art of Kerala. This method is a significant part of Chavittunatakam is often sang by Kattiyakaran. Mangalam forms the last scene of Chavittunatakam. The Nadakam comes to a close by the dawn. The closing scene, all the actors and accompanies under the leader ship of Ashan on the stage in to a semi-circle. After this they sing the mangalam, a prayer of thanks to the Jesus Christ, Mary and patron saint for the happy ending of the Nadakam. This is a general feature of other Kerala stage arts.

In Chavittunatakam costumes, the influence of Kathakali is seen, in some excessively non-human character like Statan, dragons etc., who are make-upped like kari (black) characters in Kathakali.⁷ These indigenous factor enriched the Chavittunatakam in different manner.

The martial background of Kerala Christians is cited as a major compelling factor. This caused the framing of drama type known as Chavittunatakam. Kalaripayattu formed the martial art of Keralites which was designed to suit the geographical dramatic and social conditions of Kerala. Both men and women were given training in this martial art.⁸ The early Christian embraced the new faith had carried forward the same culture of their parent faith. They practiced many to the rites and rituals observed by the Hindu folk. They took part in the Hindu festivals and a condition of communal harmony provided. All these factors have influenced greatly the character of the Christian folk theatre in Kerala.

With the advent of the Portuguese, the social set up of early Christian in Kerala had changed. The Portuguese intended to Christianize or Latinize the indigenous people to their culture.⁹ For achieving this aim, they conducted the synod of damper is 1599. The decrees of the synod prevented the free intermingling of Hindu and Christian religious cultural and social elements.

An important change brought about by the Decrees was that the martial Christian folk were prevented from lacking part in the traditional show of strength and martial abilities. The Christian had the right to wear arms just like high caste Namboothiri warriors and Nairs which was a symbol of dignity and they took part in the

display of power like Onappada under the supervision of the respective kings.¹⁰ Synod of Diamper prevented and abolished all these privileges. This necessitated the evolution of an alternative way to act as a safety valve to suppress resentments.¹¹ The new arts form called Chavittunatakam was, thus formulated giving more importance to heroic sentiments (veena rasam) and this satisfied the Christian population to a great extent.

The Christian were not allowances from that time to see any kind of Hindu art forms. This to get balanced by the promotion of Christian theatre arts and folk dance in Kerala. The church extended patronage to these art forms.¹² At a later stage, church withdraw the support to Chavittunatakam alleging that night shows led to the destruction of morality. As in all lands (in Kerala also folk institutions are woven in to the very social structure of the people and are molded by the social and religious practices and beliefs.

Different type of exotic and indigenous factors influenced Chavittunatakam heavily. Beautiful assemblance of so many art forms in Europe and Kerala showing in Chavittunatakam. It connects entirely different culture and the art form in one folk art. The diversity of different art forms in Chavittunatakam gives a unique identity

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THE FOOL'S WISDOM: A RE-VISIONING OF CLASSIC NOVELS THROUGH SUFI PERSPECTIVE

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The archetype of holy fool or wise fool depicts the process of self search and discovery of man. Caricatures of physical humor always communicate well from culture to culture. The folk figure Mulla Nasruddin in folk tales, Miguel Cervantes' Don Quixote in *Don Quixote*, Fyodor Dostoevsky's Prince Myshkin in *The Idiot* and Mark Twain's Jim in *The Adventures of Huckleberry Finn* are such archetypes of wise fools that illustrate self-search or self-discovery.

Sufism has pervaded the creation of these characters. Sufi stylistic and thematic devices are quite relevant in the postmodern literary context. Modern and post modern writers have adapted traditional Sufi narrative methods like the fragmentary picaresque narrative and self reflective parables to enhance the human perception of life and universe. These techniques force and challenge the reader to travel through a road not taken. These structures prompt questioning, auditory imaging, visualizing and encourage personal associations and enhance creative manipulation. Nasruddin, Quixote, Jim and Prince Myshkin thus become Sufi constructs who carry their message across frontiers.

Human experience is uniquely different and essentially the same. The archetype of holy fool or wise fool depicts the process of

self search and discovery of man. They become creative vehicles to examine the layers of human soul and to warn humanity that we are running out of time unless we work to develop ourselves. Caricatures of physical humor always communicate well from culture to culture and so Mulla stories has travelled around for thousands of years from India in East to Spain in the West and eventually found its way into Cervantes' classic *Don Quixote*.

The above characters are instances of raw human experiences who embrace life with gusto and heroism. We find similar postmodern characters in the works of Samuel Beckett, James Joyce etc. These characters lack emotionalism. Sufis claim that sentimentalism and emotionalism is a barrier for the accurate view of life. Nasruddin, Quixote, Jim and Prince Myshkin thus become Sufi constructs who carry their message across frontiers.

These figures are not mere entertainers, but wise men who satirize our own follies. The paper highlights the relevance of an in-depth and wider study of Sufism as a literature-relevant-strata rather than a stereotyped religious branch. It also anticipates to emphasize the importance of humor in creating insights.

Spiritual traditions have always influenced our cultural and literary traditions. Sufi tales, jokes, poems and jokes are a source of intense delight and self reflection. Sufi literature strives to transcend the boundaries of self not wanting to anchor writing into an identity. The meaning of a Sufi tale comes through contemplation, ignoring the analytical approach and process of memorizing.

Humor, joking and jesting had been means of entertainment and tools for thinking over the depths of life from ancient

literature especially Sufi literature. Use of irony, allegory, short and long anecdotes, comedy, satire and farce provoke crudest practical joke to elegant witticism. The caricatures like Mulla and Quixote provide an illustrative criticism of life and literature. They lead to a process what we can call "apprehension" rather than "comprehension".

The divine idiot is a hybrid concept which grows out of the crossings of numerous discursive currents and traditions, both secular and non-secular, none of which are themselves utterly monolithic or unified: the history of Christian Saints; the philosopher fools of ancient Rome; the professional fool tradition, traceable back to the courts of the Egyptian pharaohs and the Mexican Aztecs who may have believed that the physically deformed and/or mentally handicapped possessed supernatural powers of magic and healing; the secular fool imagery which developed out of Renaissance Humanism, and, related to this, traditions of courtly and/or royal fool imagery, as that which informs Shakespearean tragedies such as *Hamlet* and *King Lear*; the natural and/or rural divine idiot of Romanticism, such as that represented by Dostoevsky's Prince Myshkin in *The Idiot* and Wordsworth's *Idiot Boy*; and the folkloric and oral narratives of African-American tradition and Native- American tribal cultures.

As embodied connections between the imaginary and history, the metaphysical and the material, the spiritual and the social, the transcendental and the ordinary, holy fools reflect a hope of redemptive powers that science, rationalism, modernity, and consumerism have not eradicated from cultural memory or popular

consciousness. Holy foolishness thus testifies to a longing for redemption via the particulars of the worldly imagination

For Sufis, Mulla Nasruddin becomes a process of self discovery that makes one pause and re-evaluate ones values and logic system in physical and metaphysical plane. Mulla ushers in a new paradigm of thought and existence in the existential dilemma posed by the modern world. Like Mulla, Don Quixote is also the social and spiritual conscience of his community. Both travel widely and their wise foolishness is a tool for thinking over the depth of things. Each of their stories is a lesson in logic. The magic of those parables are relevant as of now as it was then, which impels one to take this topic as an object of deeper study.

The Mulla stories especially vary in interpretation even to the same person at different times. It is this metaphysical content that distinguishes these stories from other jokes and parables. They evoke a distancing effect, comfort and escape from the existential dilemmas of the postmodern world. They offer us a new way of thought and wisdom different from the strictly rational approach. The approach here is a more practical one that comes from immediate experience of life than from books.

The name "sufism" simply means "wisdom" and a Sufi teacher works first with story, metaphor, poetry, spiritual practice or music, in order to get beyond and behind the blocks that the conscious mind puts up. Sufi stories may express humorous, sad or mixed emotions, but generally they are not moralistic, nor is there one particular point to get, as one would in a joke or riddle. The

stories may have many layers, and the most obvious ones often give way to the more subtle only with time and experience.

On the whole, whether condensed or not, Sufi teaching stories sufficiently disorient the reader's rational faculties so that a potential channel for discerning the story's wisdom can be established. Doris Lessing does this in many of her later narratives, including *The Memoirs of a Survivor*, *Briefing for a Descent into Hell*. The Sufi teaching story aims to shake the audience's existing worldview to such a point that one stops looking at the world through any single lens.

Doris Lessing's direct quotes and simulation of them, in her novels would suggest that she takes them seriously and gives them her full attention, in turn requiring our full attention and effort at understanding her own stories that resemble Nasrudin's in spirit. Sufi jokes mock the ultimate inadequacy of logic. The collection of Idries Shah offers best of Mulla Nasruddin stories. For example, the Hodja demonstrates the interconnectedness in life when, while walking along a deserted street in the night, he sees a troop of horsemen coming toward him. Frightened out of his wits, he jumps over a wall and finds himself in a graveyard. The horsemen follow him and see the Hodja cowering with fear. "What are you doing there?" they ask him, and the Hodja replies, "It is more complicated than you assume! You see, *I* am here because of you; and you, *you* are here because of *me*." (124)

The tradition of divine idiocy expresses a paradox: if the wisdom of the world is but folly to God, and if God's own foolishness is the one true, divine wisdom, then the worldly must

renounce all worldly wisdom in order to become truly wise. One must become, by an act of will, a fool. Divine idiocy is thus a form of repudiation: one repudiates the vainglorious wisdom of the world and cultivates the childlike trust and spiritual naiveté which is a defining mark of perfection

While in Russian culture the divine idiot has remained a central figure of spiritual life and of magical possibility in folklore, in the U.S. s/he carries a deeply secular significance whose roots reach back to the enlightenment and to American romanticism. The American idiot is a natural legislator who represents instinctual rather than institutional law. One finds such images and stories of divine idiots in American literature, folklore, popular culture and mass media. These images and narratives often relate the problem of an enlightened individual's relation to an imagined majority that neither recognizes nor values his gifts.

They examine the situation of a character who lives outside the conventional moral frames and institutional structures which regulate American society. They express extreme hopefulness with regard to the social contract on which national identity is based, yet they also reveal the inherent contradictions of that contract. The American idiot is thus an important spiritual expression of radical disunities, or an imaginative world of radical, even irreconcilable contradictions in American moral, pragmatic life. The American idiot is part saint and part madman, part prophet and part con-man, part healer and part lunatic.

Dostoevsky's Prince Myshkin in *The Idiot* may indeed represent the social and philosophical problems inherent in the

Christian ideal of goodness. However, the American Idiot symbolized by Jim in *Huckleberry Finn* represents the contradictions inherent in our utopian ideals of equality, democracy, and freedom, our well ordered manufacturing of social consensus and social consciousness at the cost of revolution.

Approaching the study of American literature and popular culture through the figure of the holy fool can help us learn more about widespread perceptions of religion and the role that religion plays in the organization of everyday life.

Like *Huckleberry Finn* and *Holden Caulfield*, idiot boys reject the complacency and dullness of formal educational and religious institutions. They live according to simple truths drawn from natural law, a native intelligence. In Dostoevsky's *The Idiot* even Prince Myshkin, in the end, returns to the company of children upon failing to manage the complexities of the adult world. "The soul is healed by being with children."(525)

Jim, despite his innocence, is able to teach *Huckleberry Finn* a lesson about natural morality. He achieves this only through his elemental humbleness, modesty, and kindness. Like Huck, Jim is childlike, but the fact that he is a grown man, morally abused by the slavery system, suggests that he is stronger spiritually and closer to divine truth than the "free" white men who Huck and Jim encounter on land, men who constantly lie, steal, and kill for money and revenge. Idiot characters, in such cases, bring to light the contradictions of an economy driven by racism.

The American idiot represents worldly possibilities of transcendence for a people who share no common origin, religion,

or relation to the divine, and he must represent the problems of democratic embodiment for a pluralistic society where, ostensibly, no "body" is privileged above any other. In *The Adventures of Huckleberry Finn* Tom says, "I reckon I got to light out for the Territory ahead of the rest, because Aunt Sally she's going to adopt me and sivilize me, and I can't stand it. I been there before."(323)

Prince Myshkin's innocence, his total sincerity, fearlessness, humility, and lack of self-interest sets him apart from other people, Dostoevsky's dialectical conception of *The Idiot* was to create a novel that would explore the theme of unlimited idealism with unlimited sensualism. In *The Idiot*, extreme idealism is embodied by the idealistic Myshkin, -a positively beautiful individual, according to Dostoevsky's plan for the novel. The author explores the capacity for the co-existence of good and evil within the charismatic personality, the struggle of greatness and fiendishness, divinity and destruction. For Dostoevsky, the problem was a distinctly religious one, a problem that extended to questions about Christian imagery in world literature and the spiritual depth of the Russian people.

Quixotic tales parallel the tales of Mulla Nasruddin, as an example of the essence of Menippean satire in its most basic form, as they are humorous vignettes poking fun at pieces of cultural issues by way of dialogue between the main protagonist and at least one other individual. They provide a twist or a new way at looking at an issue, generally provoking laughter at the same time. It treats social constructs or beliefs with a humorous tone or playful manner. Don Quixote says, "The ability to reason the un-reason which has

afflicted by reason saps my ability to reason, so that I complain with good reason of your infinite loveliness."(13)

Mullah is often a figure of ridicule, yet very cunning, and the stories make fun of despotic rulers and of religious orthodoxy. And yes, Mulla would have understood about the windmills and the giants. For the Mulla, like Don Quixote, often saw the world rather differently. Did he not once throw yeast into a lake to turn it into yoghurt? Did he not once ride his donkey facing backwards? One day Nasruddin was riding his donkey facing towards the back. To people's queries on this unusual gesture he said that it's not that he was sitting on the donkey backwards, he was just interested in where he has been coming from more than where he was going to.

In the world that we live in, akin now in some respects to those autocratic worlds in which only the fool could get away with telling Truth to Power; Cervantes, has the answer - humor, and an understanding of history which is not idealized, but aware of complexities, and aware of Power can save us.

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COLONIAL REFLECTIONS AND MODERN WOMEN: INTROSPECTING 'MEENAKSHI'

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The colonialist, who inherited the enormously old and systematic western scheme of knowledge, about the east called the orient, viewed what they found here as primitive and superstitious in contradiction to their civilized and scientific west. Their criteria of assessment and mode of representation of native life were preconceived and distorted beyond recognition¹. To them, the native life was uncivilized and barbarous that desperately needed reforms. And education in western knowledge was the primary step they prescribed for reforming the colonial societies.

The intellectuals in 19th century India adopted an idealized view off the state system based on liberal principles, most of them accepted and even welcomed British rule as divine dispensation². That Britain in the first half of the 19th century represented the most advanced polity and economy in the world and it was accepted that British rule was the chosen instrument leading India to the path of political and economic modernisation. Their values, notions, clothing, behaviour and ways of life were pictured as superior features of modern life by facilitating the circulation of literary creations embodying practices of modernity.

The western values were soon internalised by native writers who began to reproduce them. Cheruvalathu Chathu Nair's 'Meenakshi'³

is a good example of this. This novel reproduces western values as superior leading to social progress. It carried the message of progress and reform as defined by the west.

In habits, rationality, dress, games, furniture, nature of dwellings and other major as well as minor aspects of the general social life, the natives began to mimic the westerners. Replacement of such traditional practices, which according to the western understanding impeded progress. Thus centuries of colonial domination created new habits and tastes. Victorian morality, which was the term used to denote the distillation of the moral views of people living at the time of Queen Victoria's reign (1837-1901). Which was become the moral climate of the United Kingdom through the 19th century. Due to the prominence of the British Empire, in the sphere of colonialism many of these values were spread across the world.

In, India also colonial perceptions were framed in accordance with this Victorian morality. Colonial modernity comes with its own critique of native custom and tradition, and all that was solid in the intellectual and cultural matrix of the elite seems to melt in to the air 4. And in accordance with the colonial perception family and culture were restructured and the system of polygamy and the sambandham system of marriage were looked down. The reforms were eager to stop them. The spread of English education has been a powerful element in the social movement.

The English educated had a western perspective towards family and kinship and naturally they wanted to do away with the system of inheritance the mother and welcomed the one through the father. Certain leaders found it a disguise to follow the matrilineal system

because there was no identity of the father. Those who viewed society through the victorian morality found it a disgrace to have no certainty of the father. They also wanted legality for some customs and regulations of marriage.

Meenakshi was written in 1890's, which was a period marked for colonial expansion and its cultural dominance. Thus Meenakshi along with so many other literary works also portrays social elements of a colonized society. Meenakshi is a story about the life of nairs 5. Meenakshi, the heroin of the novel pictured as a member of nair family. Heroin's high qualities of character, romance and fulfilment of her romance became the central theme of the novel. Along with this theme there was depicted another major character called Kochammalu, who was figured as person just opposite to Meenakshi. Kochammalu maintaining a sambandham relation with a malayalee Brahmin (Embranthiri). While maintaining this malayalee Brahmin as her sambandham she maintained conjugal relationship with several people, who were the members of feudal aristocracy of that region. Kochammalu was following age old customs and was enjoying the conjugal freedom accorded to a nair lady in those times. But the novelist with a vision of victorian morality takes a judgemental position and has made a moralistic judgment denigrating the character of Kochammalu. And at the end Kochammalu was transforming herself to a new women i.e. with the expectable women identity put forwarded in accordance with the victorian moral code.

By creating these two binary characters the novelist actually tried to project the acceptable female identity. Norms and expectations

which define male and female natures and behaviour. Thus gender is a social construct. Gender is a feature of social construct. And these gender identity is internalized and does becomes a dimension of women's identities. The development process in childhood and beyond is not merely a process of internalization. It is also a process of individualization. Thus, women's identities are both gendered and individualized. Identities are individualised. Individualisations will not entirely her own choice 6. This individualisation does not fully protect women's capacities. Women identities are gendered in patriarchal cultures does impede women's ability to function as self-determining agents7.

Patriarchal societies fashioning as women with bodily self-discipline and fantasies are of internalised oppression. And these imaginaries available to women that would be the bonds of internalized oppression.

These imageries actually would be the bonds of internalized oppression. Identities are individualized. But how gender marks a woman's identity will not be entirely her own choice. Gender works its way in to identity in ways that we may not be conscious of and in ways that we may not be able to change.

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3-D PASSWORD

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ABSTRACT

The 3-D passwords which are more customizable and very interesting way of authentication. Now the passwords are based on the fact of Human memory. Generally simple passwords are set so as to quickly recall them. The human memory, in our scheme has to undergo the facts of Recognition, Recalling, Biometrics or Token based authentication. Once implemented and you log in to a secure site, the 3-D password GUI opens up. This is an additional textual password which the user can simply put. Once he goes through the first authentication, a 3-D virtual room will open on the screen. In our case, let's say a virtual garage.

The 3-D password is a multi factor authentication scheme. The 3-D password presents a 3-D virtual environment containing various virtual objects. The user navigates through this environment and interacts with the objects. The 3-D password is simply the combination and the sequence of user interactions that occur in the 3-D virtual environment. The 3-D password can combine recognition, recall, token, and biometrics based systems into one authentication scheme. This can be done by designing a 3-D virtual environment that contains objects that request information to be recalled, information to be recognized, tokens to be presented, and biometric data to be verified.

Index Terms: *3-D password, definition, authentication, objects, working*

Introduction

The 3-D passwords are more customizable and very interesting way of authentication. Now the passwords are based on the fact of Human memory. Generally simple passwords are set so as to quickly recall them. The human memory, in our scheme has to undergo the facts of Recognition, Recalling, Biometrics or Token based authentication. Once implemented and you log in to a secure site, the 3-D password GUI opens up. This is an additional textual password which the user can simply put. Once he goes through the first authentication, a 3-D virtual room will open on the screen. In our case, let's say a virtual garage.

The 3-D password is a multi factor authentication scheme. The 3-D password presents a 3-D virtual environment containing various virtual objects. The user navigates through this environment and interacts with the objects. The 3-D password is simply the combination and the sequence of user interactions that occur in the 3-D virtual environment. The 3-D password can combine recognition, recall, token, and biometrics based systems into one authentication scheme. This can be done by designing a 3-D virtual environment that contains objects that request information to be recalled, information to be recognized, tokens to be presented, and biometric data to be verified.

For example, the user can enter the virtual environment and type something on a computer that exists in (x_1, y_1, z_1) position, then enter a room that has a fingerprint recognition device that exists in a position (x_2, y_2, z_2) and provide his/her fingerprint. Then, the user can go to the virtual garage, open the car door, and turn on

the radio to a specific channel. The combination and the sequence of the previous actions toward the specific objects construct the user's 3-D password.

Virtual objects can be any object that we encounter in real life. Any obvious actions and interactions toward the real life objects can be done in the virtual 3-D environment toward the virtual objects. Moreover, any user input (such as speaking in a specific location) in the virtual 3-D environment can be considered as a part of the 3-D password. [1]

Definition

Users Nowadays are provided with major password stereotypes such as textual passwords, biometric scanning, tokens or cards (such as an ATM) etc .Mostly textual passwords follow an encryption algorithm as mentioned above. Biometric scanning is your "natural" signature and Cards or Tokens prove your validity. But some people hate the fact to carry around their cards, some refuse to undergo strong IR exposure to their retinas(Biometric scanning).Mostly textual passwords, nowadays, are kept very simple say a word from the dictionary or their pet names, girlfriends etc. Years back Klein performed such tests and he could crack 10-15 passwords per day. Now with the technology change, fast processors and many tools on the Internet this has become a Child's Play. [1]

Authentication

Authentication is one of the most important security service provided to system by the different authentication schemes or

algorithms. To protect any system authentication must be provided, so that only authorized persons can have right to use or handle that system & data related to that system securely. There are many authentication algorithms are available some are effective & secure but having some drawback. Previously there are many authentication techniques were introduced such as graphical password, text password, Biometric authentication, etc. generally there are four types of authentication techniques are available such as:

- Knowledge based: means what you know. Textual password is the best example of this authentication scheme.
 - Token based: means what you have. This includes Credit cards, ATM cards, etc as an example. Biometrics: means what you are. Includes Thumb impression, etc.
 - Recognition Based: means what you recognize. Includes graphical password, iris recognition, face recognition, etc.
- [2]

3-D Virtual Environment

In this multi-factor authentication scheme the basic building block used is 3-D virtual environment. 3-D virtual environment is created inside a 2D screen, refer fig.5. 3-D environment is a real time scenario seen by peoples in day to day life which is created virtually in 3-D virtual environment. We can use any real time object as a environment like any room or village but for simplicity we suggest to use small environment like room.

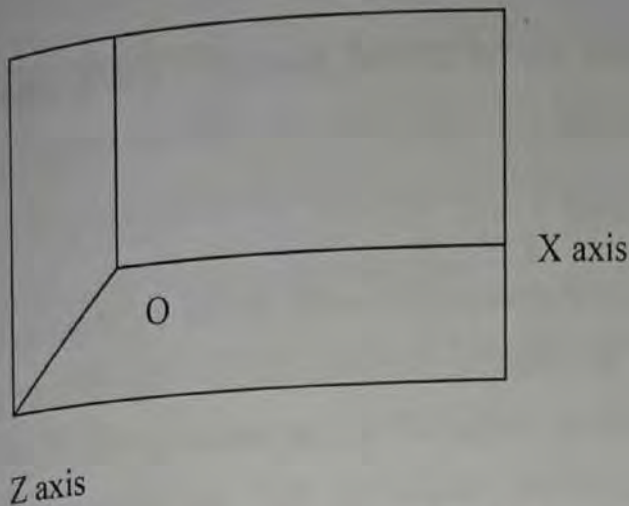


Fig.1: 3-D environment under 2D screen

For selecting the sequence of objects (i.e. points) we have used a very simple, easy & efficient algorithm called as convex hull algorithm. The 3-D quick hull algorithm is used. & also the points selected are stored in the form of 3-D co-ordinate(x, y, z) in a simple text file. Some design guidelines related to 3-D environment such

- Virtual environment selected in such a way so that it is similar to real life object.
- Every object is unique & distinct from other.

Virtual environment size should be considered. [2]

Existing System

Current authentication systems suffer from many weaknesses. Textual passwords are commonly used. Users tend to choose meaningful words from dictionaries, which make textual passwords easy to break and vulnerable to dictionary or brute force attacks. Many available graphical passwords have a password space that is

less than or equal to the textual password space. Smart cards or tokens can be stolen.

Proposed System

The proposed system is a multi factor authentication scheme. It can combine all existing authentication schemes into a single 3-D virtual environment. This 3-D virtual environment contains several objects or items with which the user can interact. The user is presented with this 3-D virtual environment where the user navigates and interacts with various objects. The sequence of actions and interactions toward the objects inside the 3-D environment constructs the user's 3-D password. The 3-D password can combine most existing authentication schemes such as textual passwords, graphical passwords, and various types of biometrics into a 3-D virtual environment. The choice of what authentication schemes will be part of the user's 3-D password reflects the user's preferences and requirements. A user who prefers to remember and recall a password might choose textual and graphical password as part of their 3-D password. On the other hand users who have more difficulty with memory or recall might prefer to choose smart cards or biometrics as part of their 3-D password. Moreover user who prefers to keep any kind of biometric data private might not interact with object that requires biometric information. Therefore it is the user's choice and decision to construct the desired and preferred 3-D password.

Objects of 3-D password

- 1) A computer with which the user can type
- 2) A fingerprint reader that requires the user's fingerprint
- 3) A biometric recognition device
- 4) A paper or a white board that a user can write, sign, or draw on
- 5) An automated teller machine (ATM) that requests a token
- 6) A light that can be switched on/off
- 7) A television or radio where channels can be selected
- 8) A staple that can be punched
- 9) A car that can be driven
- 10) A book that can be moved from one place to another
- 11) Any graphical password scheme
- 12) Any real life object
- 13) Any upcoming authentication scheme [1]

Architectural Study

This section tells about that how to create 3-D password & what are different schemes used to form a complete 3-D password. 3-D password is multi-factor & multi password authentication scheme. So that many password schemes like textual password, graphical password, biometric, etc. password schemes can be used as a part of 3-D password. Choosing of different schemes are based on category of user who are going to use this scheme to their system. [2]

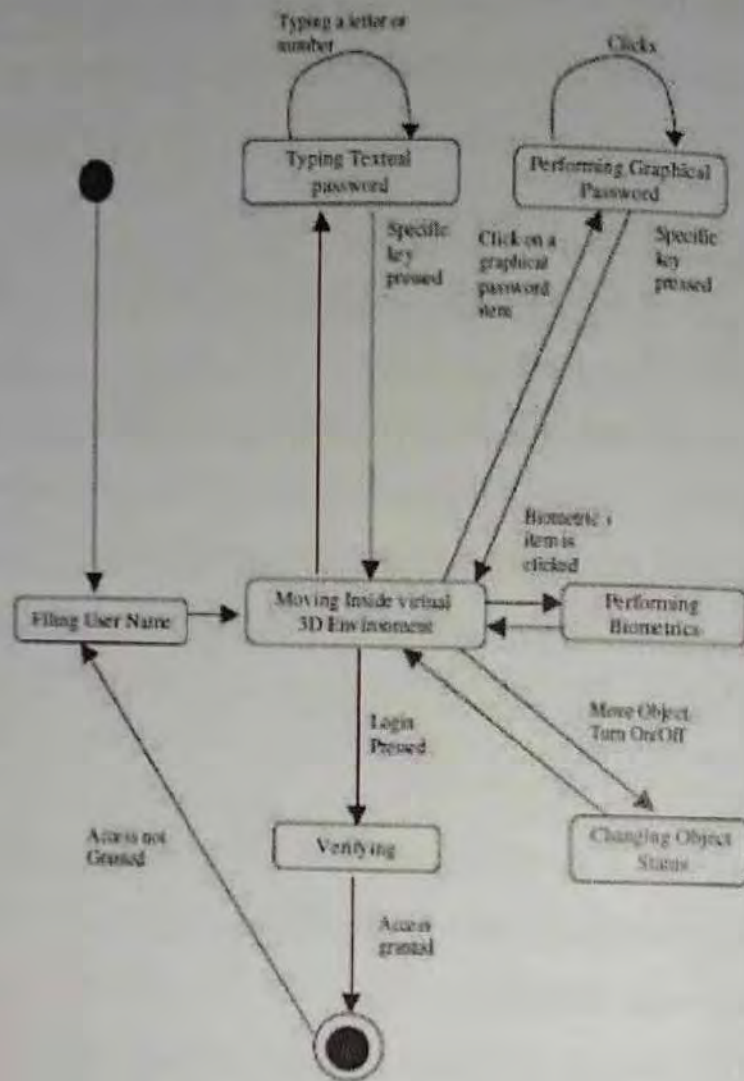


Fig. 2: State diagram for creating 3-d password

Working of 3-D Password Scheme

In 3-D password user have to First Authenticate with simple textual password(I.e. user need to provide user name & password) Once authentication successful then user moves in 3-D virtual environment, Thereafter a computer with keyboard will be seen on screen. On that screen user have to enter password (textual).which is stored in a simple text file in the form of encrypted co-ordinates (x_1, y_1, z_1) . After successfully completion of this authentication,

Then user automatically enter into an art gallery, where he/she has to select multiple point in that gallery or he can do some action in that environment like switching button on/off or perform action associated with any object like opening door, etc. The sequence in which user has clicked (i.e. selecting objects) that sequence of points are stored in text file in the encrypted form. In this way the password is set for that particular user. For selection of points we have used 3-D Quick hull algorithm which is based on convex hull algorithm from design & analysis of algorithms. Next time when user wants to access his account then he has to select the entire object which he has selected at the time of creating password with proper sequence. This sequence is then compared with coordinates which are stored in file. If authentication successful thereafter access is given to authorized user. [2]

Consider a three dimensional virtual atmosphere space that is of the size $G \times G \times G$. Each point in the three dimensional atmosphere space represented by the coordinates: $(x, y, z) \in [1..G] \times [1..G] \times [1..G]$. The entities are distributed in the three-dimensional virtual atmosphere. Every entity has its own (x, y, z) coordinates. Assume the user can navigate and walk through the three-dimensional virtual atmosphere and can see the entities and interact with the entities. The input device for interactions with entities can be a mouse, a keyboard, stylus, a card reader, a microphone...etc.

For example, consider a user who navigates through the 3-D virtual atmosphere that consists of a temple area. Let us assume that the user is in the virtual area and the user turns around to the bell located in $(9, 16, 80)$ and rings it. Then, the user touch deity feet.

The user types "KRISHNA" into a computer that exists in the position of (10, 5, 25). The user then walks over and turns off the light located in (15, 6, 20), and then goes to a white board located in (55, 3, 30) and draws just one dot in the (x, y) coordinate of the white board at the specific point of (420, 170). The user then presses the login button. The initial representation of user actions in the 3-D virtual atmosphere can be recorded as follows:

- (9, 16, 80) Action = Ring the bell;
- (9, 16, 80) Action = touch deity feet;
- (10, 5, 25) Action = Typing, "K";
- (10, 5, 25) Action = Typing, "R";
- (10, 5, 25) Action = Typing, "I";
- (10, 5, 25) Action = Typing, "S";
- (10, 5, 25) Action = Typing, "H";
- (10, 5, 25) Action = Typing, "N";
- (10, 5, 25) Action = Typing, "A";
- (15, 6, 20) Action = Turning the Light Off;
- (55, 3, 30) Action = drawing, point = (420,170); [3]

Applications

The 3D password can have a password space that is very large compared to other authentication schemes, so the 3-D password's main application domains are protecting critical systems and resources.

1. Critical servers-

Many large organizations have critical servers that are usually protected by a textual password. A 3-D password

authentication proposes a sound replacement for a textual password.

2. Nuclear and military facilities-

Such facilities should be protected by the most powerful authentication systems. The 3-D password has a very large probable password space, and since it can contain token-, biometrics-, recognition-, and knowledge based authentications in a single authentication system, it is a sound choice for high level security locations.

3. Airplanes and jet fighters-

Because of the possible threat of misusing airplanes and jet fighters for religio-political agendas, usage of such airplanes should be protected by a powerful authentication system. In addition, 3-D passwords can be used in less critical systems because the 3-D virtual environment can be designed to fit to any system needs.

4. Banking-

Banks like PNB and SBI have also started 3-D secure services for verified by Visa (VbV). Verified by Visa is a new service that will let you use a personal password with your State Bank of India. Visa card, giving you added assurance that only you can use your State Bank of India Visa card to make purchases over the Internet. 3-D Secure Service confirms your identity through a simple check process when you make online purchases. 3-D Secure Service provides you with a password to protect your online transactions just like you use your PIN at the ATM.

State Bank Group Debit Cards - Registration for Verified By Visa is a mandatory requirement to make online purchases using your State Bank Group Visa Debit Card on Verified By Visa enabled merchant websites. 3-D Secure Service enables you to authenticate yourself at the time of purchase by using your 3-D Secure Service Password and protects your State Bank Group Visa Debit Card against misuse. Registration for MasterCard SecureCode is a mandatory requirement to make online purchases using your State Bank Group Debit Cards. For your security we have enabled online purchases only to customers who have subscribed to MasterCard SecureCode. This is to ensure that you can authenticate yourself at the time of purchase by entering your MasterCard SecureCode password and no one else can misuse your State Bank Group Debit Card.

5. Other areas- ATM, Desktop Computers & laptop logins, Web Authentication

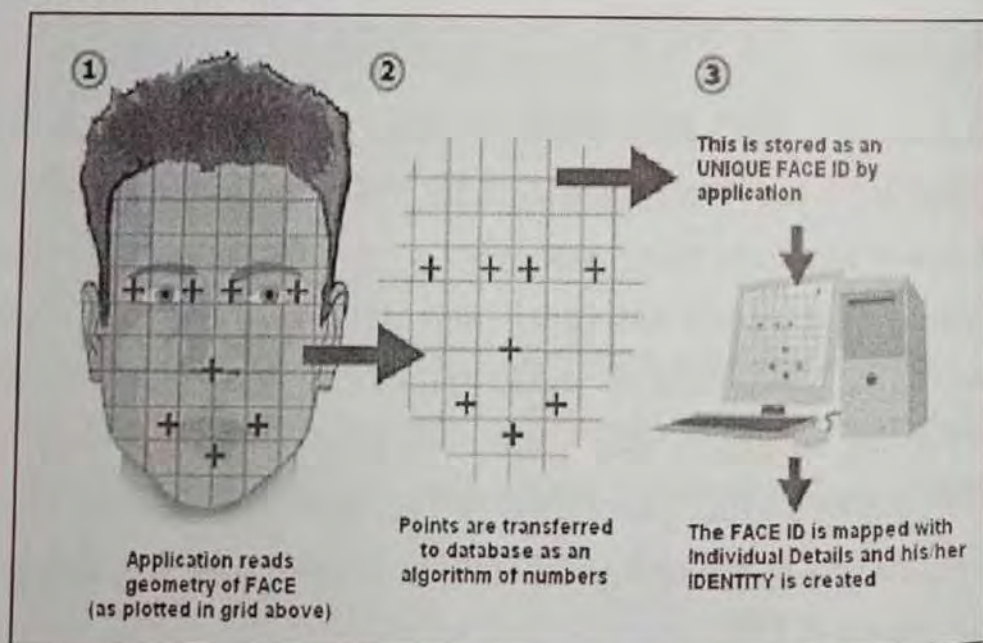


Fig. 3: Face recognition

Advantages

- Easiness to memorize: Users can memorize a 3-D password as a 'little' story which makes the password easy to remember
- Flexibility: 3-D passwords allows multi-factor authentication. Smart cards, biometrics and alpha num password can embedded in the 3-D password technology
- Strength: A scenario in a 3-D environment offers as almost unlimited combination of possibilities. As such system can have specific 3-D world, hack are extremely difficult.
- The 3-D password gives users the freedom of selecting what type of authentication techniques.
- Secrets those are not easy to write down on paper.
- The scheme secrets should be difficult to share with others.
- Provide secrets that can be easily revoked or changed.

Disadvantages

- Time and memory requirement is large.
- Shoulder-suffering attack is still can affect the schema.
- More expensive as cost required is more than other schemes.

Conclusion

The 3-D password is a multi factor authentication scheme that combines the various authentication schemes into a single 3-D

virtual environment. The virtual environment can contain any existing authentication scheme or even any upcoming authentication scheme or even any upcoming authentication schemes by adding it as a response to actions performed on an object. Therefore the resulting password space becomes very large compared to any existing authentication schemes. Thus this paper tells about our study about 3-D password, still it is in early stage. Future work is needed in 3-D password scheme to develop this scheme up to more secure level. Implementing 3-D password for mobile handset is the important future work.

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SOLUTION FOR MIXED DATA CLUSTERING IN DATA MINING

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ABSTRACT

Clustering is process in data mining which align objects which have a high degree of similarity in the same group. The real world data is a combination of both numeric and nominal data. The major problem of existing mixed data clustering is, it undergoes much iteration which will reduce the performance and increase the complexities regarding the storage space. Here I introduce an integrated framework using Frequent Pattern based framework for Mixed data Clustering (FPMC) algorithm, to cluster mixed data by performing a one-time clustering along with attribute reduction. This algorithm comes under divide and conquer paradigm, with three phases, namely crack, transformation and merging. The outcome of this clustering will provide a reliable answer when we are in a trouble with mixed datasets.

Keywords: *Frequent Pattern Analysis, Clustering, Normalization, Sum of Squared Error, FPMC*

Introduction

Clustering is the process of identifying the classes of objects with similar characteristics and features. Clustering segregates the similarities and differences in the database. It form groups of related

data called as either classes or clusters. Apart from classification, clustering is an un-supervised learning method to uncover the causal structures and patterns of a given dataset. It is also called as automatic classification in the sense, data objects can be treated as an implicit class. The distinct advantage is that, it can automatically find the groupings. The methods for clustering are mainly divided into following categories: 1-Partitioning, 2-Hierarchical, 3-Density based, 4-Grid-based methods. First, partitioning method is a popular heuristic method which improves the segregation by moving the objects from one group to another by a local optimum approach. The techniques comes under this methods are K-means and K-medoids. Second, hierarchical method breaks down the data objects to various levels of hierarchies. Two Hierarchical approaches are agglomerative and divisive. The agglomerative approach builds the hierarchies in a bottom up fashion and divisive approach does the same in the top down. Third, density based method finds a solution for the difficulty in finding arbitrary shaped clusters. The clusters are grown on the basis of density to solve the issue. The high density area is called as clusters, whereas the sparse areas are used to differentiate the clusters. Fourth, grid-based method is one of the high speed clustering methods which divides the object space into a number of cells that form a grid structure. The processing time depends upon cells in each dimension of the quantized space [1]. Most clustering algorithms focus on numerical data clustering. But real data set contains mixed data types which are commonly numerical, categorical or binary. As the categorical data cannot be ordered as numerical, need of finding a solution algorithm to cluster mixed data is high.

In this paper, I propose FPMC, an efficient algorithm for mixed data clustering. FPMC performs clustering after crack, transformation and merge phase. In crack phase, the total data set is divided into nominal and numerical packs. Then the processing is in the transformation phase where frequent patterns are mined to extract frequency-token which are numerical substitutes to nominal values. Attribute reduction is achieved by converting 'n' number of nominal attributes to a single numerical attribute. Merge phase combines the output of transformation phase and numerical attributes which will undergo normalization before any numerical clustering algorithm is applied.

Proposed System

In this paper, I propose, FPMC algorithm to cluster mixed data by avoiding the need to cluster many times which reduce the performance. The FPMC algorithm replaces the nominal attributes with the count of frequent pattern that occur in the data set.

The FPMC algorithm uses Apriori as it is the backbone to do mixed data clustering. Apriori algorithm is chosen because to its easiness in implementation and simplicity in data structure. Apriori algorithm is suitable for large data sets. This algorithm first separates the total data set into nominal and numerical. In the crack stage, after replacement of missing values. The crack stage produces two results one is nominal and other numerical pack. The nominal pack undergoes FPMC transformation where frequent pattern analysis is done to obtain a frequency -token value. This value is obtained by analyzing the nominal pack with the frequent patterns derived from Apriori analysis by evaluating Equation (1).

Let P_1, P_2, \dots, P_n be the frequent patterns obtained after Apriori analysis.

$$RS_{value} = \{P_i, \text{Count}++; \text{flag}=\text{Valid}; \quad \text{or} \quad !P_i, \text{flag}=\text{Valid}; \} \dots (1)$$

P_i represent i^{th} frequent pattern we consider and RS_{value} is the result of row wise scan. If a match is found, i.e. $RS_{value} = P_i$, increment the count and mark the row as valid. Else mark it as invalid. Then the merging of numeric and frequency-token attribute takes place, followed by normalization.

The normalization is a process in which all attributes are given an equal weight, this is particularly useful for distance measures while used in clustering. The three main types of normalization techniques available are min-max, z-score and decimal scaling normalization. Min-max normalization is the process of altering the original data into a specified range in a linear fashion. For mapping a v value, of an attribute A from range $[\text{min}_A, \text{max}_A]$ to a new range $[\text{new_min}_A, \text{new_max}_A]$, the computation is given by Equation(2).

$$\frac{v - \text{min}_A}{\text{max}_A - \text{min}_A} (\text{new_max}_A - \text{new_min}_A) + \text{new_min}_A \dots \dots \dots (2)$$

where 'v' is the new value in the required range.

Z-score normalisation is based on mean and median, it is also called as zero mean normalization. The formula is given in Equation (3).

$$\frac{d' = d - \text{mean}(P)}{\text{std}(P)} \dots \dots \dots (3)$$

where $\text{mean}(p)$ = sum of the all attribute values of P and $\text{Std}(P)$ =Standard deviation of all values of P. Decimal-scale normalization is based on the decimal point movement depending on the absolute values of the attributes. The formula is given below in Equation (4).

$$\text{Max} (|d|) < 1.[5] \dots\dots\dots (4)$$

Z-score normalisation is used in the FPMC algorithm as it maintains the range and dispersion of the data set i.e. Standard deviation/ variance. After normalization an efficient numerical clustering algorithm is applied. The process flow of FPMC algorithm is given below in Fig. 1.

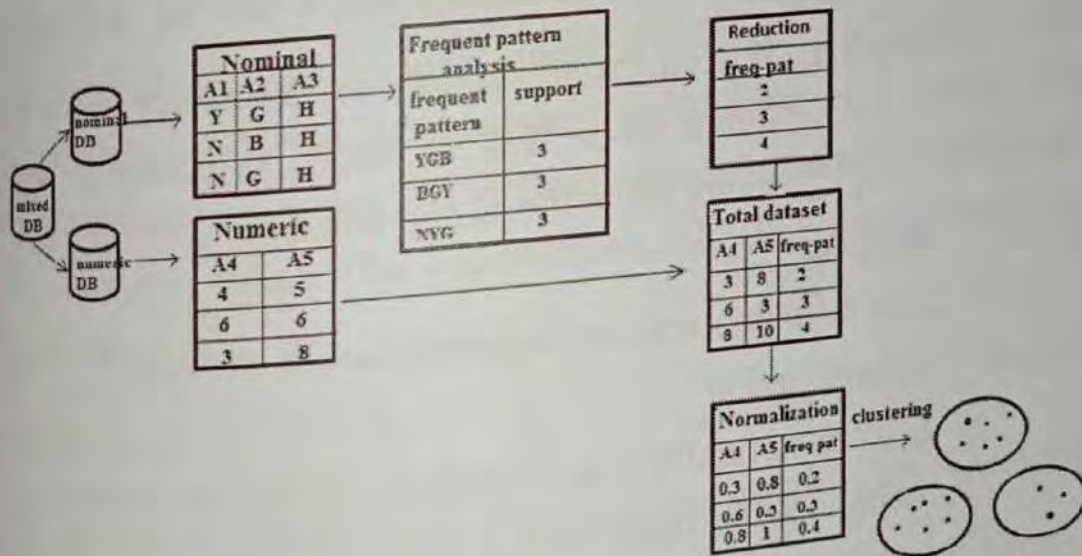


Fig. 1: FPMC flow of execution

Step1: Partitioning
 After the replacement of missing values from the dataset it is divided into numerical and nominal packs.

Step2: Transformation.

Step 2.1: Frequent patterns are generated using Apriori.

Step 2.2: Perform row wise scan on the nominal attributes and execute the operations in *Equation (1)* for All instances. After the row wise scanning of entire dataset, we get the value for frequency-token. For the first frequency pattern i.e. P_1 go to Step 2.3 otherwise Step 2.4.

Step 2.3: Set frequency-token attribute as count value for all rows marked as valid. And also store a copy of count to init-token.

Step 2.4: If (init-token < count) set frequency-token as count value if it is empty, or replace it with count value if it is non-empty.

Step 3: Merging

Join the numerical and frequency-token attribute.

Step 4: Normalization

Z-score normalisation is used in FPMC algorithm as it maintains the range and dispersion of the data set i.e. Standard deviation/variance.

Step 5: Clustering

Perform any numerical clustering algorithm

Step 6: Validation of the results

SSE is used as evaluation criteria for FPMC algorithm. The Sum of squared error for each data point is the distance to the nearest cluster. The clustering produces good results with small

value for SSE with minimum number of clusters. Equation (5) gives the formula for SSE calculation where m_i represent the mean of the cluster and x the data point C the cluster.

$$SSE = \sum_{i=1}^K \sum_{x \in C_i} \text{dist}^2(m_i, x) \dots \dots \dots (5)$$

Conclusion

The main objective of clustering is to group similar instances of a data set. The grouping of instances is made on the basis of similarity measures. Even though there are many distance measures available, most of them are applied either on numeric or nominal data. But the real world data are usually mixed in nature. So we cannot directly apply these distance measures. For that most algorithms for mixed data requires partitioning of a dataset into nominal and numeric which increases the complexity and degrades the clustering result. This Experiment could find out a solution for the problem.

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BIOINFORMATICS – IN HUMAN

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ABSTRACT

Rapid advances in bio informatics are providing new hopes to patients of life threatening diseases. Genechips will be able to screen heart attack and diabetics years before patients develop symptoms. In near future, patients will go to a doctor's clinic with lab-on-a-chip devices. The device will inform the doctor in real time if the patient's ailment will respond to a drug based on his DNA. These will help doctors diagnose life-threatening illness faster, eliminating expensive, time-consuming or deals like biopsies and sigmoidoscopies. Genechips re classify diseases based on their underlying molecular signals, rather than misleading surface symptoms. The chip would also confirm the patient's identity and even establish paternity.

Keywords – *Bioinformatics, Nucleus, DNA*

1. Introduction

Bio informatics is an inter disciplinary research area. It is a fusion of computing, biotechnology and biological sciences. Bioinformatics is poised to one of the most prodigious growth areas in the next to decades. Being the interface between the most rapidly advancing fields of biological and computational sciences, it is immense in scope and vast in applications.

Bioinformatics is the study of biological information as it passes from its storage site in the genome to the various gene products in the cell. Bioinformatics involves the creation and computational technologies for problems in molecular biology. As such, it deals with methods for storing, retrieving and analyzing biological data, such as nucleic acid (DNA/RNA) and protein sequence, structures, functions, pathways and interactions. The science of Bioinformatics, which is the melding of molecular biology with computer science, is essential to the use of genomic information in understanding human diseases and in the identification of new molecular targets of drug discovery. New discoveries are being made in the field of genomics, an area of study which looks at the DNA sequence of an organism in order to determine which genes code for beneficial traits and which genes are involved in inherited diseases.

2. Human Electronics

The nucleus is the most obvious organelle in the human cell. Within the nucleus is the DNA responsible for providing the cell with its unique characteristics. The DNA is similar in every cell of the body, but depending on the specific cell type; some genes may be turned on or off—that is why a liver cell is different from a muscle cell, and a muscle cell is different from a fat cell. About 99.9% of the sequence is identical between any two people. But because the small percentage of DNA that differs can relate to an individual's disease. Scientists are comparing sequence using DNA chips from healthy people and those from patients with a specific disease to help identify genetic targets for drug discovery information about

genetic variation can help to predict which patients are likely to benefit from specific drugs.

The most significant and the biggest application of DNA chips is the use of DNA micro arrays for expression profiling. In expressions profiling the chip controls how different part soft hegenes turned on or off to create certain types of cells. If the gene is expressed in one way, it may result in normal muscle, for instance. If it is expressed in another way, it may result in a tumor. By comparing these different expressions, researchers hope to discover ways to predict and perhaps to prevent diseases.



Fig 1: DNA

Electronic circuit can be incorporated in the chip to detect various states of DNA. DNA carries an electric charge. That charge can be read on the chip, just like cells on a memory array. This DNA chip would like to diagnose life-threatening bacterial infections.

In DNA the medium is a chain of two units (phosphate & ribose), and the most easily recognizable message is provided by a sequence of letters (bases) attached to the chain. The DNA has two

sequences of letters wrapped in the form of a double helix. The DNA has two sequences of letters wrapped around each other in the form of a double helix. One is the complement of other, so that the sequence of one string (strand) can be inferred from the sequence of other. The DNA sequence of bases encodes 20 amino acids. Under instructions received from DNA, amino acids join together in the same order as they are encoded in DNA to form proteins. Chains of amino acids, which fold in complicated ways, play a major role in determining how we interact with the environment.

Genomic information is revolutionizing life sciences. The quest for understanding how genetic factors contribute to human disease is gathering speed. The 46 human chromosomes house almost three billion base pairs of DNA that contain 30,000 to 40,000 protein-coding genes. Using bio informatics find out how genes contribute to diseases that have a complex pattern of inheritance, such as diabetics, asthma, and mental illness. No one gene can tell whether a person has a disease or not. A number of genes may make a subtle contribution to a person's susceptibility to a disease. Gene may also affect how a person reacts to the environment. As the entire human genome is too big a sequence on its own, sequencing and reading a genome demand heavy computational resources.

Bioinformatics is largely, although not exclusively, a computer-based discipline. Computers are important in bioinformatics for two reasons:

First, many bioinformatics problems require the same task to be repeated millions of times.

For example, comparing a new sequence to every other sequence stored in a database or comparing a group of sequences systematically to determine evolutionary relationships. In such cases, the ability of computers to process information and test alternative solutions rapidly is indispensable.

Second, computers are required for their problem-solving power. Typical problems that might be addressed using bioinformatics could include solving the folding pathways of protein given its amino acid sequence, or deducing a biochemical pathway given a collection of RNA expression profiles. Computers can help with such problems, but it is important to note that expert input and robust original data are also required.

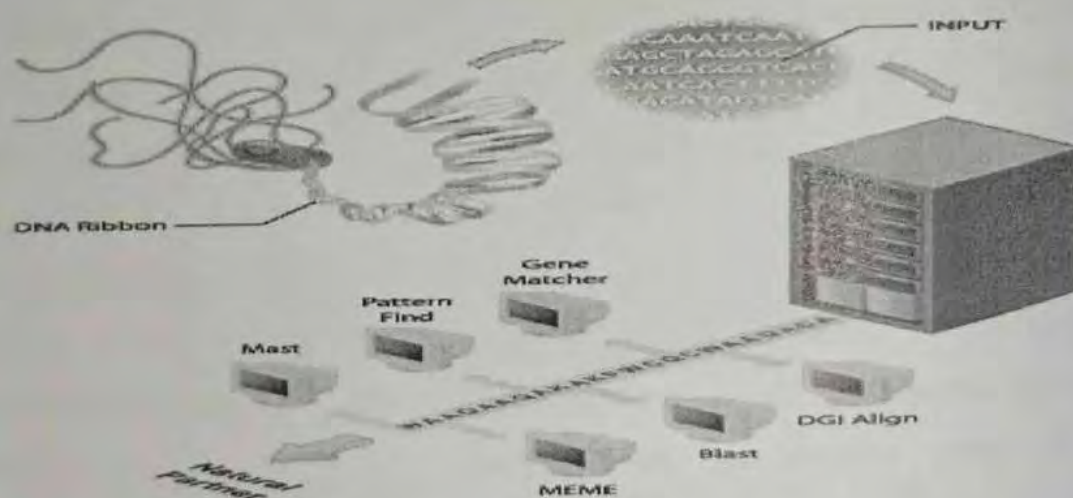


Fig. 2: Involvement of computers

We start with an overview of the sources of information: these may be divided into raw DNA sequences, protein sequences, macromolecular structures, genome sequences, and other whole genome data. Raw DNA sequences are strings of the four baseletters comprising genes, each typically 1,000 bases long. The

GenBank repository of nucleic acid sequences currently holds a total of 9.5 billion bases in 8.2 million entries (all database figures as of August 2000). At the next level are protein sequences comprising strings of 20 amino acid-letters. At present there are about 300,000 known protein sequences.

3. Gene Expression

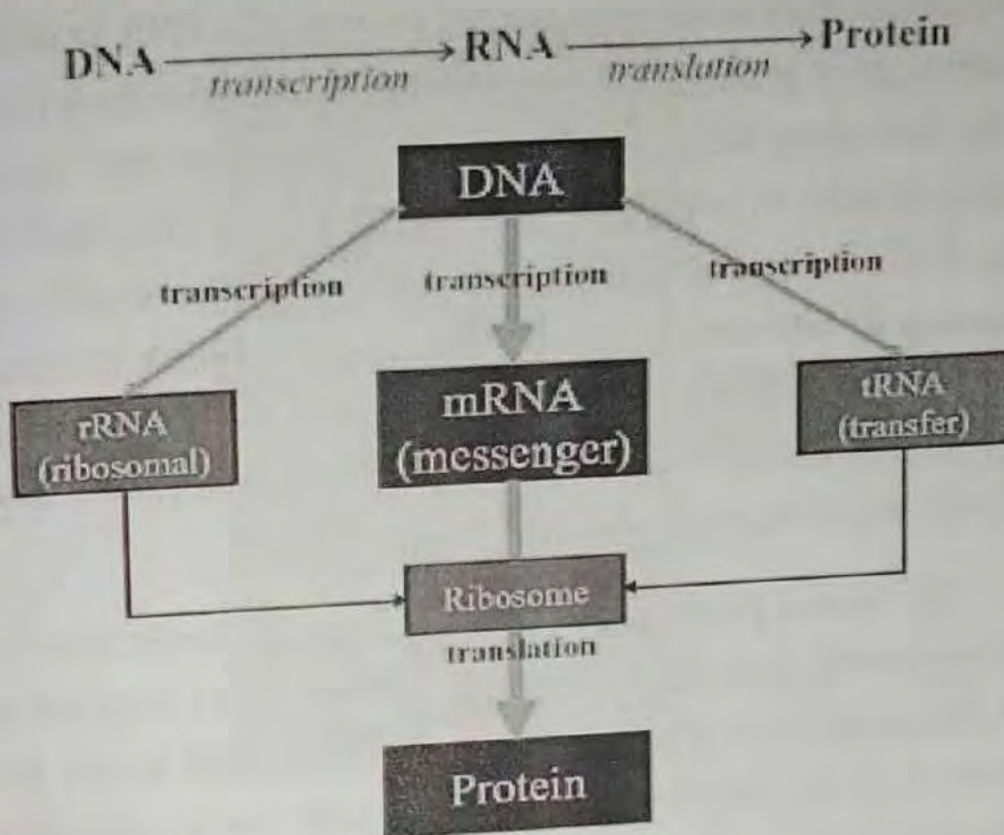


Fig. 3: Gene Expression

mRNA encodes the genetic information as copied from the DNA molecules. Transcription is the process in which DNA is copied into an RNA molecule. The resulting linear molecule is an mRNA transcript. tRNA molecules develop a well-defined three-dimensional structure which is critical in the creation of proteins. Translation is the process in which the nucleotide base sequence

of the processed mRNA is used to order and join the amino acids into a protein with the help of ribosomes and tRNA. The 3D structure of proteins is mainly determined by X-ray crystallography and by nuclear magnetic resonance (NMR). It is time consuming and costly.

A powerful new tool available in biology is microarrays. They allow determining simultaneously the amount of mRNA production of thousands of genes. Microarray experiments require three phases. In the first phase one places thousands of different one-stranded chunks of RNA in minuscule wells on the surface of a small glass chip. (This task is not unlike that done by a jet printer using thousands of different colors and placing each of them in different spots of a surface.) The chunks correspond to the RNA known to have been generated by a given gene. The 2D coordinates of each of the wells are of course known.

The second phase consists of spreading—on the surface of the glass—genetic material (again one-stranded RNA) obtained by a cell experiment one wishes to perform. Those could be the RNAs produced by a diseased cell, or by a cell being subjected to starvation, high temperature, etc. The RNA already in the glass chip combines with the RNA produced by the cell one wishes to study. The degree of combined material obtained by complementing nucleotides is an indicator of how much RNA is being expressed by each one of the genes of the cell being studied.

The third phase consists of using a laser scanner connected to a computer. The apparatus measures the amount of combined material in each chip well and determines the degree of gene

expression—a real number—for each of the genes originally placed on the chip. Microarray data is becoming available in huge amounts. A problem with this data is that it is noisy and its interpretation is difficult. Microarrays are becoming invaluable for biologists studying how genes interact with each other. This is crucial in understanding disease mechanisms.



Fig. 4: Microarray

The most significant and the biggest application of DNA chips is the use of DNA microarrays for expression profiling. In expressions profiling the chip controls how different parts of the genes turned on or off to create certain types of cells. If the gene is expressed in one way, it may result in normal muscle, for instance. If it is expressed in another way, it may result in a tumor. By comparing these different expressions, researchers hope to discover ways to predict and perhaps to prevent diseases.

4. Conclusion

DNA is the genetic material of organism. It contains all the information needed for the development and existence of an organism. The DNA molecule is formed of two long poly nucleotide chains which are spirally coiled on each other forming a double helix. Thus it has the form of spirally twisted ladder. DNA is a molecule made from sugar, phosphate and bases. The bases are guanine (G), cytosine (C), adenine (A) and thiamine (T). Adenine pairs only with Thiamine and Guanine pairs only with Cytosine. The various combinations of these bases make up with DNA. That is; AAGCT, CCAGT, TACGGT etc. An infinite number of combinations of these bases is possible. And then the gene is a sequence of DNA that represents a fundamental unit of heredity. Human genome consists of approximately 30,000 genes, containing approximately 3 billion base pairs.

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CLOUD COMPUTING

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ABSTRACT

Cloud computing means storing and accessing data and programs over the Internet instead of your computer's hard drive. The cloud is just a metaphor for the Internet. It is basically an Internet-based network made up of large numbers of servers - mostly based on open standards, modular and inexpensive. Clouds contain vast amounts of information and provide a variety of services to large numbers of people. The benefits of cloud computing are Reduced Data Leakage, Decrease evidence acquisition time, they eliminate or reduce service downtime, they Forensic readiness, they Decrease evidence transfer time The main factor to be discussed is security of cloud computing, which is a risk factor involved in major computing fields.

For it to be considered "cloud computing," you need to access your data or your programs over the Internet, or at the very least, have that data synchronized with other information over the Web. In a big business, you may know all there is to know about what's on the other side of the connection; as an individual user, you may never have any idea what kind of massive data-processing is happening on the other end. The end result is the same: with an online connection, cloud computing can be done anywhere, anytime.

Keywords: *cloud computing, SaaS, cloud, private cloud, cloud security, public cloud, benefits of cloud computing*

Introduction

When you store your photos online instead of on your home computer, or use webmail or a social networking site, you are using a “cloud computing” service. If you are an organization, and you want to use, for example, an online invoicing service instead of updating the in-house one you have been using for many years, that online invoicing service is a “cloud computing” service.

Cloud computing refers to the delivery of computing resources over the Internet. Instead of keeping data on your own hard drive or updating applications for your needs, you use a service over the Internet, at another location, to store your information or use its applications. Doing so may give rise to certain privacy implications.

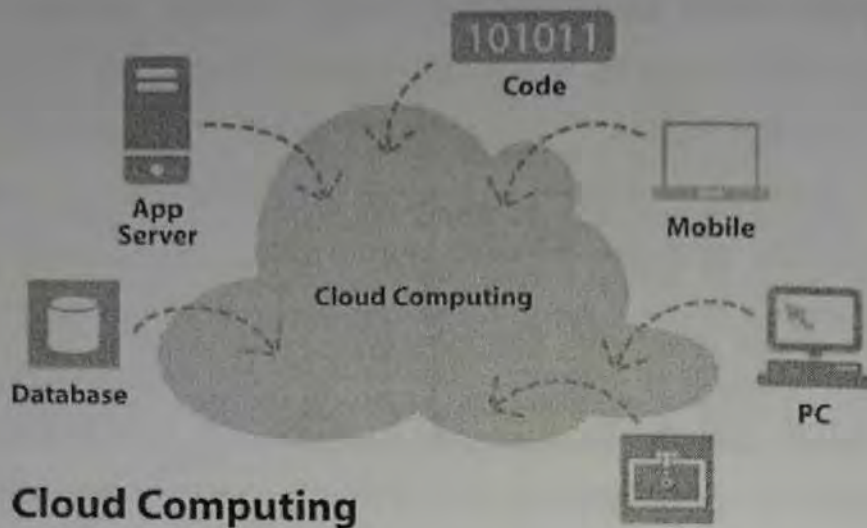
Cloud computing is the delivery of computing services over the Internet. Cloud services allow individuals and businesses to use software and hardware that are managed by third parties at remote locations. Examples of cloud services include online file storage, social networking sites, webmail, and online business applications. The cloud computing model allows access to information and computer resources from anywhere that a network connection is available. Cloud computing provides a shared pool of resources, including data storage space, networks, computer processing power, and specialized corporate and user applications.

What is a Cloud computing?

The term “cloud”, as used in this white paper, appears to have its origins in network diagrams that represented the internet, or

various parts of it, as schematic clouds. "Cloud computing" was coined for what happens when applications and services are moved into the internet "cloud." Cloud computing is not something that suddenly appeared overnight; in some form it may trace back to a time when computer systems remotely time-shared computing resources and applications. More currently though, cloud computing refers to the many different types of services and applications being delivered in the internet cloud, and the fact that, in many cases, the devices used to access these services and applications do not require any special applications.

- Cloud computing is Internet- ("CLOUD-") based development and use of computer technology ("COMPUTING")
- Cloud computing is a general term for anything that involves delivering hosted services over the Internet.
- It is used to describe both a platform and type of application.
- Cloud computing also describes applications that are extended to be accessible through the Internet.
- These cloud applications use large data centers and powerful servers that host Web applications and Web services.
- Anyone with a suitable Internet connection and a standard browser can access a cloud application.



User of the cloud only care about the service or information they are accessing - be it from their PCs, mobile devices, or anything else connected to the Internet - not about the underlying details of how the cloud works.”

History

The Cloud is a metaphor for the Internet, derived from its common depiction in network diagrams (or more generally components which are managed by others) as a cloud outline.

The underlying concept dates back to 1960 when John McCarthy opined that "computation may someday be organized as a public utility" (indeed it shares characteristics with service bureaus which date back to the 1960s) and the term The Cloud was already in commercial use around the turn of the 21st century. Cloud computing solutions had started to appear on the market, though most of the focus at this time was on Software as a service.

The Cloud is a term with a long history in telephony, which has in the past decade, been adopted as a metaphor for internet

based services, with a common depiction in network diagrams as a cloud outline.

The underlying concept dates back to 1960 when John McCarthy opined that "computation may someday be organized as a public utility"; indeed it shares characteristics with service bureaus which date back to the 1960s. The term cloud had already come into commercial use in the early 1990s to refer to large ATM networks.

By the turn of the 21st century, the term "cloud computing" had started to appear, although most of the focus at this time was on Software as a service (SaaS).

In 1999, Salesforce.com was established by Marc Benioff, Parker Harris, and his fellows. They applied many technologies of consumer web sites like Google and Yahoo! to business applications. They also provided the concept of "On demand" and "SaaS" with their real business and successful customers. The key for SaaS is being customizable by customer alone or with a small amount of help. Flexibility and speed for application development have been drastically welcomed and accepted by business users.

IBM extended these concepts in 2001, as detailed in the Autonomic Computing Manifesto -- which described advanced automation techniques such as self-monitoring, self-healing, self-configuring, and self-optimizing in the management of complex IT systems with heterogeneous storage, servers, applications, networks, security mechanisms, and other system elements that can be virtualized across an enterprise.

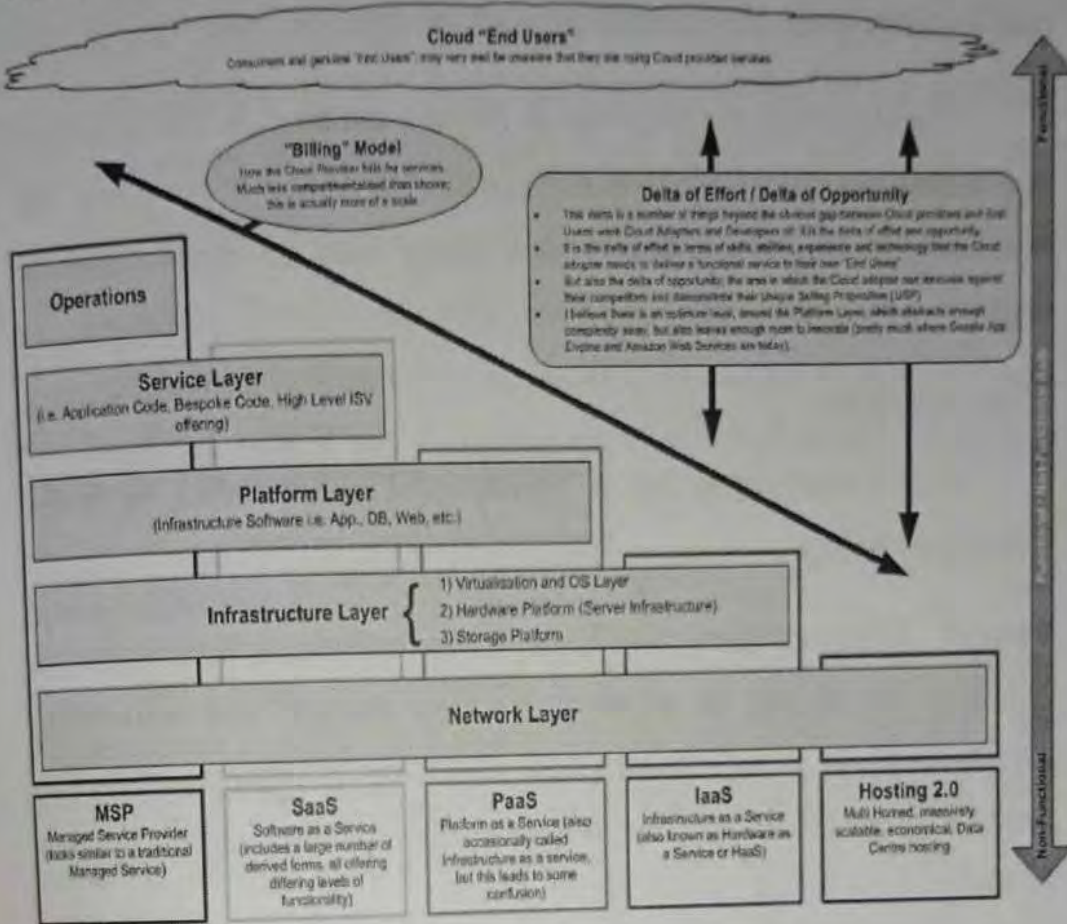
Amazon.com played a key role in the development of cloud computing by modernizing their data centers after the dot-com bubble and, having found that the new cloud architecture resulted in significant internal efficiency improvements, providing access to their systems by way of Amazon Web Services in 2005 on a utility computing basis.

2007 saw increased activity, including Goggle, IBM and a number of universities embarking on a large scale cloud computing research project, around the time the term started gaining popularity in the mainstream press.

In 2008, there was a glut of active parties in the increasingly popular field of Cloud Computing. Today, Cloud Computing generates over 10.3 million matches on Google. The scope of Cloud Computing grew from simple infrastructure services such as storage and calculation resources to include applications. However, this meant that forerunners such as application service providing and Software as a Service would also henceforth be included under the designation of Cloud Computing.

At the bottom of these developments was the eventual shifting of IT services away from local computers to the Internet or, generally speaking, in networks. Eventually, Cloud Computing realized an idea that had already been hit upon by Sun Microsystems long before the Cloud Computing hype: The network will be the computer.

Architecture



Cloud architecture, the systems architecture of the software systems involved in the delivery of cloud computing, comprises hardware and software designed by a cloud architect who typically works for a cloud integrator. It typically involves multiple cloud components communicating with each other over application programming interfaces, usually web services.

This closely resembles the UNIX philosophy of having multiple programs doing one thing well and working together over universal interfaces. Complexity is controlled and the resulting systems are more manageable than their monolithic counterparts.

Cloud architecture extends to the client, where web browsers and/or software applications access cloud applications.

Cloud storage architecture is loosely coupled, where metadata operations are centralized enabling the data nodes to scale into the hundreds, each independently delivering data to applications or user.

Characteristics

Cloud computing has a variety of characteristics, with the main ones being:

Shared Infrastructure — Uses a virtualized software model, enabling the sharing of physical services, storage, and networking capabilities. The cloud infrastructure, regardless of deployment model, seeks to make the most of the available infrastructure across a number of users.

- **Dynamic Provisioning** — Allows for the provision of services based on current demand requirements. This is done automatically using software automation, enabling the expansion and contraction of service capability, as needed. This dynamic scaling needs to be done while maintaining high levels of reliability and security.
- **Network Access** — Needs to be accessed across the internet from a broad range of devices such as PCs, laptops, and mobile devices, using standards-based APIs (for example, ones based on HTTP). Deployments of services in the cloud include everything from using business applications to the latest application on the newest smart phones.

- **Managed Metering** — Uses metering for managing and optimizing the service and to provide reporting and billing information. In this way, consumers are billed for services according to how much they have actually used during the billing period.

In short, cloud computing allows for the sharing and scalable deployment of services, as needed, from almost any location, and for which the customer can be billed based on actual usage.

Service Models

Once a cloud is established, how its cloud computing services are deployed in terms of business models can differ depending on requirements. The primary service models being deployed (see Figure 1) are commonly known as:

- **Software as a Service (SaaS)** — Consumers purchase the ability to access and use an application or service that is hosted in the cloud. A benchmark example of this is Salesforce.com, as discussed previously, where necessary information for the interaction between the consumer and the service is hosted as part of the service in the cloud.

Also, Microsoft is expanding its involvement in this area, and as part of the cloud computing option for Microsoft Office 2010, its Office Web Apps are available to Office volume licensing customers and Office Web App subscriptions through its cloud-based Online Services.

- **Platform as a Service (PaaS)** — Consumers purchase access to the platforms, enabling them to deploy their own software and applications in the cloud. The operating systems and network access are not managed by the consumer, and there might be constraints as to which applications can be deployed.
- **Infrastructure as a Service (IaaS)** — Consumers control and manage the systems in terms of the operating systems, applications, storage, and network connectivity, but do not themselves control the cloud infrastructure.

Also known are the various subsets of these models that may be related to a particular industry or market. Communications as a Service (CaaS) is one such subset model used to describe hosted IP telephony services. Along with the move to CaaS is a shift to more IP-centric communications and more SIP trunking deployments. With IP and SIP in place, it can be as easy to have the PBX in the cloud as it is to have it on the premise. In this context, CaaS could be seen as a subset of SaaS.

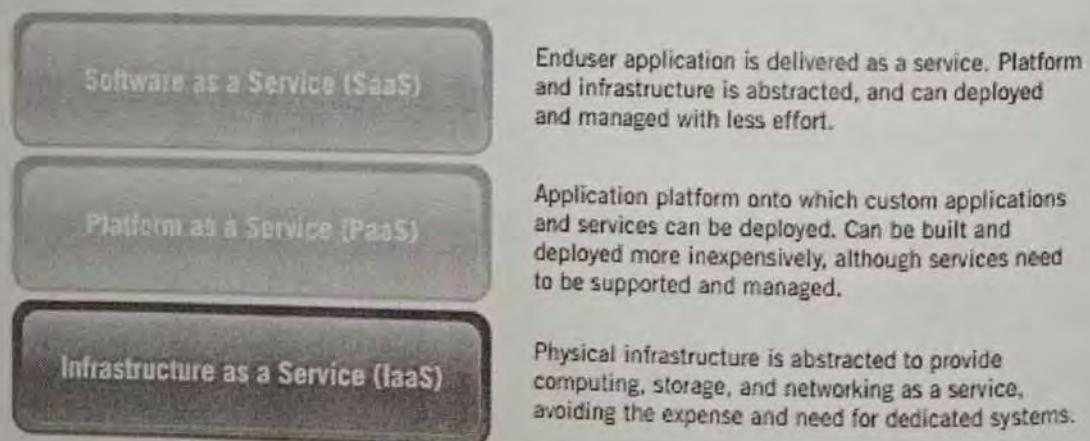


Figure 1. Service Model Types

Deployment Models

Deploying cloud computing can differ depending on requirements, and the following four deployment models have been identified, each with specific characteristics that support the needs of the services and users of the clouds in particular ways (see Figure 2).

- **Private Cloud** — The cloud infrastructure has been deployed, and is maintained and operated for a specific organization. The operation may be in-house or with a third party on the premises.
- **Community Cloud** — The cloud infrastructure is shared among a number of organizations with similar interests and requirements. This may help limit the capital expenditure costs for its establishment as the costs are shared among the organizations. The operation may be in-house or with a third party on the premises.
- **Public Cloud** — The cloud infrastructure is available to the public on a commercial basis by a cloud service provider. This enables a consumer to develop and deploy a service in the cloud with very little financial outlay compared to the capital expenditure requirements normally associated with other deployment options.
- **Hybrid Cloud** — The cloud infrastructure consists of a number of clouds of any type, but the clouds have the ability

through their interfaces to allow data and/or applications to be moved from one cloud to another. This can be a combination of private and public clouds that support the requirement to retain some data in an organization, and also the need to offer services in the cloud.

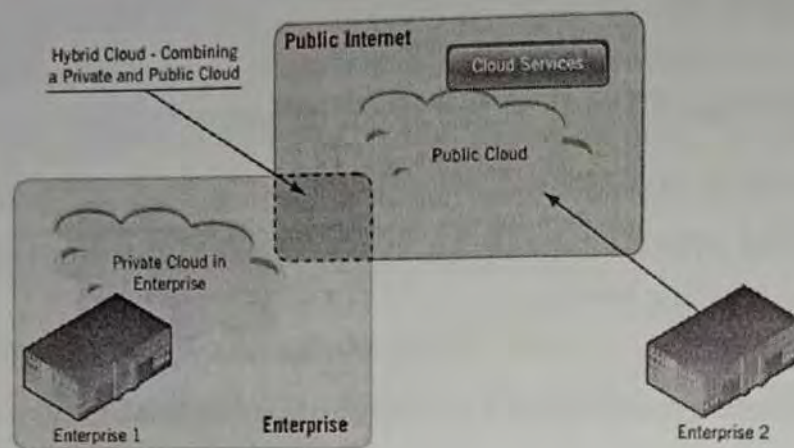


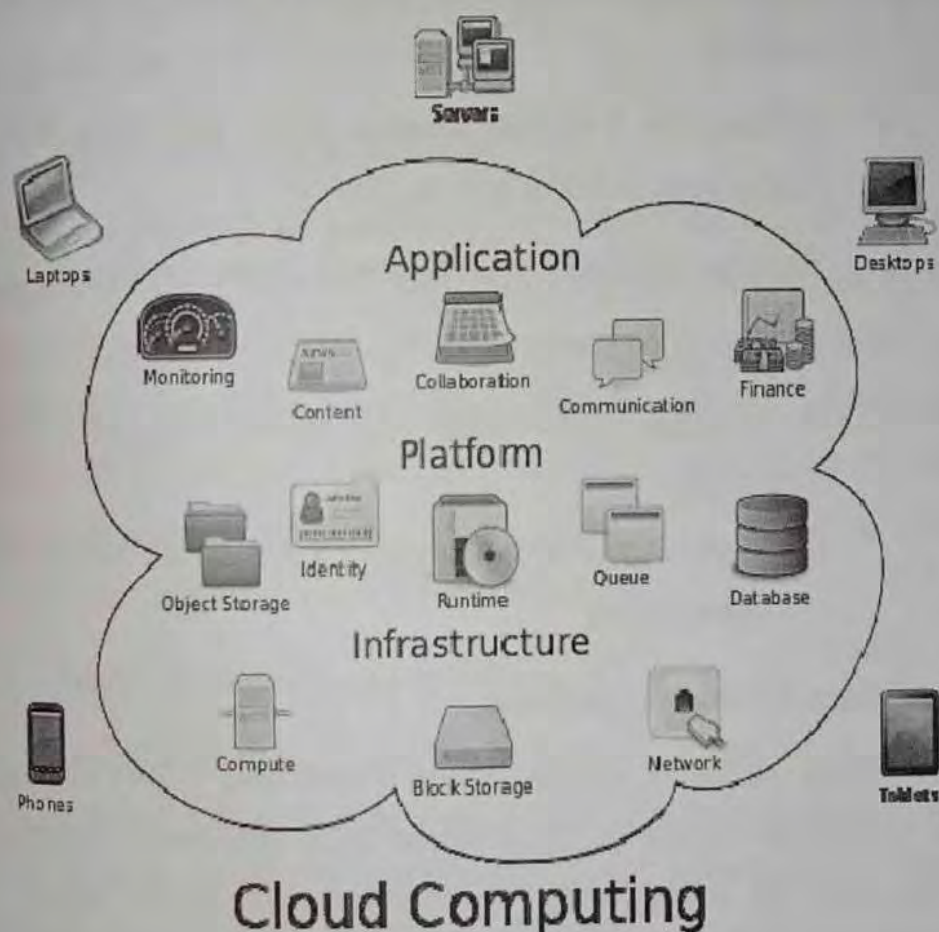
Figure 2. Public, Private, and Hybrid Cloud Deployment Example

Benefits

The following are some of the possible benefits for those who offer cloud computing-based services and applications:

- **Cost Savings** — Companies can reduce their capital expenditures and use operational expenditures for increasing their computing capabilities. This is a lower barrier to entry and also requires fewer in-house IT resources to provide system support.
- **Scalability/Flexibility** — Companies can start with a small deployment and grow to a large deployment fairly rapidly, and then scale back if necessary. Also, the flexibility of cloud computing allows companies to use extra resources at peak times, enabling them to satisfy consumer demands.

- **Reliability** — Services using multiple redundant sites can support business continuity and disaster recovery.
- **Maintenance** — Cloud service providers do the system maintenance, and access is through APIs that do not require application installations onto PCs, thus further reducing maintenance requirements.
- **Mobile Accessible** — Mobile workers have increased productivity due to systems accessible in an infrastructure available from anywhere.



Application

A cloud application leverages cloud computing in software architecture, often eliminating the need to install and run the application on the customer's own computer, thus alleviating the burden of software maintenance, ongoing operation, and support. For example:

- Peer-to-peer / volunteer computing (BOINC, Skype)
- Web applications (Webmail, Facebook, Twitter, YouTube, Yammer)
- Security as a service (MessageLabs, Purewire, ScanSafe, Zscaler)
- Software as a service (Google Apps, Salesforce, Nivio, Learn.com, Zoho, BigGyan.com)
- Software plus services (Microsoft Online Services)
- Storage [Distributed]
 - Content distribution (BitTorrent, Amazon Cloud Front)
 - Synchronisation (Dropbox, Live Mesh, SpiderOak, ZumoDrive)

Challenges of Cloud Computing

Cloud computing challenges have always been there. Companies are increasingly aware of the business value that cloud computing brings and are taking steps towards transition to the cloud. A smooth transition entails a thorough understanding of the benefits as well as challenges involved. Like any new technology, the adoption

of cloud computing is not free from issues. Some of the most important challenges are as follows.

1. Security and Privacy

The main challenge to cloud computing is how it addresses the security and privacy concerns of businesses thinking of adopting it. The fact that the valuable enterprise data will reside outside the corporate firewall raises serious concerns. Hacking and various attacks to cloud infrastructure would affect multiple clients even if only one site is attacked. These risks can be mitigated by using security applications, encrypted file systems, data loss software, and buying security hardware to track unusual behavior across servers.

2. Service Delivery and Billing

It is difficult to assess the costs involved due to the on-demand nature of the services. Budgeting and assessment of the cost will be very difficult unless the provider has some good and comparable benchmarks to offer. The service-level agreements (SLAs) of the provider are not adequate to guarantee the availability and scalability. Businesses will be reluctant to switch to cloud without a strong service quality guarantee.

3. Interoperability and Portability

Businesses should have the leverage of migrating in and out of the cloud and switching providers whenever they want, and there should be no lock-in period. Cloud computing services should have the capability to integrate smoothly with the on-premise IT.

4. Reliability and Availability

Cloud providers still lack round-the-clock service; this results in frequent outages. It is important to monitor the service being provided using internal or third-party tools. It is vital to have plans to supervise usage, SLAs, performance, robustness, and business dependency of these services.

5. Performance and Bandwidth Cost

Businesses can save money on hardware but they have to spend more for the bandwidth. This can be a low cost for smaller applications but can be significantly high for the data-intensive applications. Delivering intensive and complex data over the network requires sufficient bandwidth. Because of this, many businesses are waiting for a reduced cost before switching to the cloud.

All these challenges should not be considered as road blocks in the pursuit of cloud computing. It is rather important to give serious consideration to these issues and the possible ways out before adopting the technology.

Security

Organizations use the Cloud in a variety of different service models (SaaS, PaaS, and IaaS) and deployment models (Private, Public, Hybrid, and Community). There is a number of security issues/concerns associated with cloud computing but these issues fall into two broad categories: security issues faced by cloud providers (organizations providing software-, platform-, or infrastructure-as-a-service via the cloud) and security issues faced by their customers (companies or organizations who host

applications or store data on the cloud). The responsibility goes both ways, however: the provider must ensure that their infrastructure is secure and that their clients' data and applications are protected while the user must take measures to fortify their application and use strong passwords and authentication measures.

In order to conserve resources, cut costs, and maintain efficiency, Cloud Service Providers often store more than one customer's data on the same server. As a result, there is a chance that one user's private data can be viewed by other users (possibly even competitors). To handle such sensitive situations, cloud service providers should ensure proper data isolation and logical storage segregation.

The extensive use of virtualization in implementing cloud infrastructure brings unique security concerns for customers or tenants of a public cloud service. Virtualization alters the relationship between the OS and underlying hardware - be it computing, storage or even networking. This introduces an additional layer - virtualization - that itself must be properly configured, managed and secured. Specific concerns include the potential to compromise the virtualization software, or "hypervisor". While these concerns are largely theoretical, they do exist.

Conclusion

Cloud Computing is in a period of strong growth, but this technology is still has some issues of security and somewhat it is immature. Government Technology Research Alliance (GTRA) research showed that the most common concern about implementing

Cloud Computing technology was security. We are all aware, country like India faced problems like digital divide and off course very low internet bandwidth. So, benefit of new technology can be reached to limited area of educational area.

But definitely, over a period of time Cloud Computing will become the most promising technology in next few years.

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IMPACT OF ENVIRONMENTAL DEGRADATION ON THE LIVING CONDITIONS OF THE FISHER FOLK

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Introduction

Kerala is situated on the southwest coast of the Indian sub continent with an area of about 38,863 square kilometers, which makes about 1.27% of the Indian territory. The state is separated from the rest of India by the Western Ghats in the east and the Arabian Sea in the west. The territory of Kerala can be divided into three regions, the highlands, midlands and the lowlands. The lowland lies close to the sea.

Kerala has a coastline of 589.5 kilometers, which forms 10% of India's total coastline and this has facilitated trade with other countries since a very long time. The density of population is very high all along the coastline as compared to the midlands and the highlands (Asia Development Bank, 2003). A very rich marine wealth with a large variety of fish and a highly skilled population of fishermen have made Kerala a leading producer and consumer of fish (Aerthayil, 2000).

The Kerala coast displays a wide range of geomorphologic and environmental characteristics that are unique in nature. The valuable resources are exploited by Fishing which is one of the major man made activities in the sea. Fishing causes several direct and indirect impacts on the marine ecosystem.

Fisher folk form an important community in Kerala, but remain neglected and marginalized inspite of the higher socio-economic progress the state has made as a whole. Kerala has the eighth position, with regard to the population of fisher folk among the fourteen coastal states. The total populace of fisher folk residing in the state of Kerala is estimated to be 11.114 lakh.

Poverty is often responsible for environmental degradation have been growing in recent years. Rural poverty is usually either explained in terms of socio-economic factors, that is, regarded as structurally induced, or it is looked up on as the outcome of impoverished natural resources. Policy makers are becoming aware that eliminating poverty and protecting our common environment are inextricably interlinked. Because the world's poorest people are both the victims and the agents of environmental degradation. The poorest people are often forced to meet short-term survival needs at the cost of long-term sustainability.

Significance

The fisher folk, like adivasis believed in day to day needs to be met by day to day fish catch. The belief that the 'Mother Sea' is the protector and provider is still strong. If there is no catch for a few days, there must be some reason why the Mother Sea is angry, they feel. Some articulate that the loss of fish catch is due to over exploitation, mostly done by large vessels, trawlers and purse-seiners.

The wind also plays a very important part in the lives of the fisher folk. Fire is also perceived by the *Mukkavas* as the expression of the anger of God and in cases of fires in the sea, they do not sail out into the sea for a few days. Light is considered as divine and known to ward off evil spirits or ghosts or natural calamities.

Candles are lit in Churches and shrines by the *Mukkuv*as as prayers or for fulfillment of their vows. Samuel (1998) also informs us, of the perception of the *Mukkuv*as regarding cholera and typhoid to be caused by spirits, ghosts and demons.

“Traditional fish workers in Kerala are socially marginalised and geographically isolated. They do not have any share in the economic and political life of state. The ratio of the profit sharing between the owner and workers vary at different places. The increased demand has led the traditional fishermen to actively involved in the mechanised fishing. It resulted in the deep-sea fishing while they complain about the encroachment by the trawlers.

Over the years, the government at large has neglected the protection and safety of the fishermen community. The government also lacks the infrastructure in terms of lifeboats and patrolling. Even the police machinery does not have proper equipments like GPS and life saving tools.

Apart from this, awareness among the fishing community on the deleterious effects of indiscriminate fishing has also been a factor in prolonging the sustainability of the marine fishery resources. The monsoon ban on fishing by trawlers is considered to be one of the significant steps initiated by the state to address resource depletion in the marine fisheries in Kerala.

Climate change could affect coastal areas in a variety of ways. Coasts are sensitive to sea level rise, changes in the frequency and intensity of storms, increases in precipitation, and warmer ocean temperatures. So it is very relevant to enquire its impact on the fishers.

Methodology

Objective of the Study

The objective of the study is to find out the impact of environmental degradation on the living conditions of the fisher folk –a special focus on the Kodungallur coastal area.

A **pilot study** was conducted to check the feasibility of conducting the study. A structured questionnaire was prepared and it was **pre-tested among** 10 respondents .Collected information were analysed by using simple statistical techniques.

Keywords

Fisher Folk

Environmental Degradation

Living Conditions

Poverty

Sample

The study is mainly based on primary data. The secondary sources of information is also used to supplement and support the primary data. Small scale fisher folk in the Eriyad Panchayat, in Kodungallur coastal area in Thrissur district formed the universe. The sample size is 50 and it was selected through Multistage Sampling. Out of the 14 Districts in Kerala, Thrissur District was selected . Out of the total 88 panchayats in Thrisur District , Eriyad Panchayat having a good number of fisher folk selected for this study, which was identified from the ‘unauthorized ‘category register of the Panchayat From which 50 respondents were selected through simple random sampling method. The primary data from the sample was collected by using structured interview schedule.

A formal interaction with authorities of Panchayat, Matsyafed etc also provided valuable information regarding the fisher folk.

Theoretical Frame Work

The impacts of degraded ecosystem services are being disproportionately borne by the poor, are a principal factor contributing to poverty, and are a barrier to achieving the Millennium Development Goals set by the United Nations (MEA, 2005).

The Black Swan Theorem: This theory was put forward by Nassim Taleb originally applied to financial risks-it deals with the highly improbable and unpredictable events that have massive impact. It refers to unexpected events of large magnitude like the Asian Tsunami and their dominant role in history.

The Dismal Theorem: This theorem developed by Prof. Martin Weitzman is a critique of the cost-benefit analysis of climate change. He says that the kind of uncertainty we face on the climate issue invalidates cost-benefit analysis and makes discussions of appropriate discount rates of little interest. Extreme climate outcomes, for e.g. very high CO₂ levels and catastrophes like a 7 meter rise in sea level have low probability but high damage and will have "fat-tailed" distributions.

Analysis

The study includes the personal data regarding the respondents like name, age, marital status, and education and family details. A detailed analysis was made on the pattern of food used, the assets, both domestic and fishing, financial conditions, social security and health on the light of changing ecological scenario. The mean age is 53.4.

A great majority (84%) have size of the family varies from 6-7. About three fourth of their family has only one breadwinner. Literacy rate is high in this community in general. Level of educational status is less among men those who start going for fishing at a younger age.

The cycle of poverty, illness and limited opportunities can become a self sustaining process that passes from one generation to another. People who are malnourished and having health problems cannot work productively to obtain food, shelter and medicine. This prevailing situation also affects the family wellbeing in general and their children who are malnourished and ill particularly. Their children are forced to work under appalling conditions. Growing up in these conditions leads to educational, psychological and development deficits that condemn the children to perpetuate this circle.

With regard to the education of their daughters, a remarkable change could be seen. A majority (62%) agreed that they encourage and support their children to go for other skilled works due to various reasons like low income, growing threats, social backwardness etc.

One of the paramount reasons for the poor quality of life and the sub-standard conditions of habitat of the marine fishing communities in Kerala state is the crowding of the whole community on a narrow coastal belt. Every fisher prefers to live on the seafront near the point where he lands his craft and from where he can observe the sea.

Land ownership is widespread. Two thirds of them have less than five cents of land. Slum like conditions are prevail. Except a few, all (88%) agreed that they face the problem of lack of privacy even inside their houses. Now more than half of them (58%) are living in Tsunami project houses. Housing conditions are poor for the fisher folk have marginally improved.

It also forecloses the possibility of developing a buffer zone along coastal and other areas. It is the lack of such buffer that compels marine fishing communities to build houses close to the high tide time. They thus continue to expose themselves to the tide time. They thus continue to expose themselves to the risk of the sea eroding their land and 'eating away' their houses. This finding is consistent with the finding of Kurien and Nandakumar, 2000.

The basic amenities related to housing such as electric lighting, toilet facilities and access to water are also at far and lower standards in the fishing villages when compared to the state as a whole. One difficulty of providing water flushing toilet facilities is that septic tanks do not function effectively because of the high water table in the sandy soil and the risk this entails of leaching of sewage into wells used for drinking water. Consequently the men use the beach all the time and the women use it only well before dawn. This lack of basic facilities, the use of the beach as a public toilet and the excessive crowding caused by the cluster-settlement pattern, give rise to poor health conditions and more chance for communicable diseases. Contagious diseases in fishing villages thus spread very rapidly under these sordid physical conditions. This is at the root of the much-reported poor health

condition in fishing communities. A study of the health status of Kerala state highlights that respiratory and skin infections, diarrhoea disorders and hookworm infestations are much more prevalent in the coastal areas of the state. In Tsunami project houses they have toilet and sanitation facilities. It also includes the rain water conservation system.

If the real incomes of the fisher folk were to improve significantly, radical institutions and organisations changes are required. The growth of motorisation and mechanisation of the crafts has contributed significantly to an increase in fish catches leading to increased volume of export of these items from our country. Modernisation has always benefited large scale fishers at the expense of small-scale ones. It also reflects in their domestic life also. Almost all the respondents possess the domestic appliances like TV, Fridge etc.

Most of them (90%) marry their children at younger age groups that is 18-19 to girl and 22-23 for boys. It is tremendously raised among them about the relationship existed in their group before. The relationship among the traditional fisherman during fish production is determined by the principle of sharing not wages. Now most of the owners of the boats are not from their area. It also reflects in their relationships too. Spirit of competition and enmity developed.

Health conditions remain quite poor. Cases of cholera, malaria, dengue fever and tuberculosis outbreaks are reported from coastal area. Porous soils and lack of land make construction of sanitary toilets difficult. Supply of potable drinking water is also

problematic. Fishing is a strenuous occupation. We have been able to show that complaints of symptoms from the muscular skeletal system are common. Then the changes in the environment has directly comes as excess sun heat, burning etc. For any health problem they usually approach the alopathy due to easy availability and comparatively less expensive than ayurveda treatment.

The levels of food intake of the fishing population are also found extremely low, deficient and unbalanced. Poor health is also related to poor food intake. Marine fishing families depend almost entirely on market for their food items. Unlike for agricultural communities, there is no possibility of raising a kitchen garden for fishing households which may even posses land. Nothing except coconut palms grows in the sandy soil. Their diet is largely unbalanced and deficient. A noteworthy feature is that except a few all others (92%) generally devoid of vegetables and consists mainly of large quantities of rice or tapioca with fish. Fishing communities can and are slowly catching up with the rest of the population of Kerala.

Dearth of drinking water is a curse of these people. As a result of many struggles now they have water supply.

They also benefited from the modern transportation and communication facilities. Most of them (88%) have motor bike or bicycle as their own. But they argued that they face much difficulty of transportation in some emergency situations as they lack good transportation facilities. Almost all the respondents have mobile phone. It is very useful for them when they are in the sea but at most of the time they are in the 'out of coverage area'.

A well proportion (98%) has no fishing assets as their own. They largely work as wage earners of other boat owners. It is very expensive to maintain an own team. The traditional system of fishing has many disadvantages over the modern group fishing. Even though there avail the funds and aids from the local governance but the conditions of refund is not encouraging them to take benefit out of it. Loans not avail for them in the guarantee of their house because most of them are Tsunami houses which can not show as a security for taking loan . About two thirds of them avail small loans as members of the Matsyafed, with relatively relaxed conditions of repayment. Fish worker organisations has helped the community in confronting and pressurizing the state and strong mechanised sector, which has resulted in various positive responses from state in favour of artisan sector, like ban on fishing by trawlers during monsoon and an array of both promotional and protection social security measures Significant improvement (74% and above) can be seen in the case of housewives that they are the members of the MGNREGA. It provides them further economic benefits.

All of them are living under fearful conditions expect anything in the very next second. Every year during monsoon they lost every thing even the loved ones. As they are living within 500 meters get no time for even crying. Due to the ecological and social reasons the legal conditions are on the increase. It some times exceeding the limits and encroach their boundary too (86%). Due to the geographic peculiarities of the coast they expect some other threats like terrorism. Coastal areas are notorious centre for many anti social activities like narcotics. About (94%) tremendously raised the questions of security of their younger generation.

As a result of tourism expansion in coastal areas quite many other issues are also raised. Probably the most threatening aspect of the burgeoning recreation and leisure industries, however is the phenomenal growth of recreational fishers in many parts of the world.

The sea is not only the store house of water but also a store of resources like food and valuable commodities such as pearl medicines and raw materials for industries. The environmental degradation and poor fisheries management (82%) are two important reasons which hamper the growth of fisheries' resources. Inefficient management of fisheries' resources and environmental pollution has caused many of the world's fisheries to decline and even collapse.

The traditional fisher folk of Kerala realize that environment has to be sustained for their own survival. Therefore, it can find a string of conservation values maintained and molded through generations in the art of conservation of marine fish resources among the traditional fishing communities. Majority of them (78%) argued that the fishing pattern has also started changing from single day fishing to multi day fishing. For example; they do not normally use nets with small mesh holes which are used by the mechanized crafts which captures everything under the sea. While the mechanized crafts catch everything under the sea, the traditional fishing communities take only what they need. Unlike the modern technologies, there is no fishing technology among the traditional fisher folk to capture an entire fish shoal, since they do not believe in such massive destruction of the resources of the sea.

Other indicators, which bring out the poverty of fishing community, heavy indebtedness, which is on the increase. Increasing the level of consumption and expenditure without any budgeting cause debt. Most of the workers Calorie intake is less than the basic standards of calorie requirements. This finding is also similar to the findings of Nayak, 1993.

Limitations

- The situation today is that there are no proper statistics of the fisher folk in the state and what is there is inadequate. Without a proper data bank on them, we find it difficult to draft proper programmes for them.

Suggestions

- Indian coast is rich with fish wealth. So an overall assessment of the total fishery sector has to be undertaken immediately. As per the assessment, a comprehensible ecosystem approach to resource use and fisheries resource management is to be adopted. This shall be regulated under the supervisory of the government of each state in the region.
- Although we continue to face many challenges collectively we may be able to implement sustainable development that raises living standards for every one while also reducing our negative environmental impacts.

Conclusion

Water may well be the most critical resource in the 21 century already at least 1.1 billion people lack access to safe drinking water, and twice that may don't have adequate sanitation. Polluted water

contributes to the death of more than 15 million people every year, most of them children under age 5. Over the past century, global food production has more than kept pace with human population growth, but there are worries about whether we will be able to maintain this pace. Soil scientists report that about two third of all agricultural lands show signs of degradation. The biotechnology and intensive farming technology responsible for much of our recent production gains are too expensive for many poor farmers. In a world of food surpluses, currently more than 850 million people are chronically undernourished, and at least 60 million face acute food shortages due to bad weather or politics.

Because we live in both the natural and social worlds and because our technology have become such dominant forces on the planet, environmental science must take human institutions and the human condition into account. we live in world of haves and have notes; a few of us live in increasing luxury, while many others lack the basic necessities for a decent healthy productive life. The World Bank estimates that more that 1.4 billion people- about one fifth of the world's population- live in acute poverty per day. These poorest of the poor generally lack access to an adequate diet, a decent housing, basic sanitation, clean water, education, medical care and other essentials for a humane existence.

And notwithstanding all the foregoing maladies, all fishers must still cope with the sea itself, which has always been one of the most uncertain destructive and dangerous working environments in the world. When we consider most fisher folk today, we are examining a type of existence usually characterised by hard outdoor

work, relatively low income, rigged individualism, a high degree of risk taking, the capture of common property resources, low public esteem and high degrees of dispersion and decentralisation-all of which contribute to making an exceedingly different mode of existence as well as a very difficult activity to manage.

From this study it could be understood that they are constantly struggling with dearth of basic necessities like safe drinking water, proper housing, toilet and sanitation, proper waste management etc. so far the modernisation and updated technology couldn't help them to improve their living conditions. Such facilities to be extended to these areas and the same time proper awareness on environmental degradation and environmental protective measures should be imparted among them. It also help them to come out from the age old miseries. A special attention to be given to women and children since they are often involved in environment hardships ultimately fall on them. Basic cleanliness, proper recycling or re compost or waste management to be taught among them.

Along with governmental agencies, NGOs can also work for the betterment of them through timely help and support. To take them into the track of eco-friendly provide them to agrokits which lead them through productive way and sustainable development to social and emotional wellbeing. A tremendous change can be noticed by participation of women in the programmes like MGNREGS, Kudumbasree programmes. Such initiatives promote sustainable development and ecofriendly atmosphere and promote healthy physical environment.

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ESTIMATION PROCEDURES FOR CURRENT STATUS COMPETING RISKS DATA IN PRESENCE OF COVARIATES

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ABSTRACT

In survival studies, current status censoring occurs when each individual in the study is observed only once at a random monitoring time and the information whether the event of interest has happened or not before the monitoring time is only available. Competing risks data with current status censoring frequently arise from cross sectional studies in demography, epidemiology and reliability studies when objects are exposed to multiple risks of failure. In the present paper, we propose a semi parametric regression model based on sub survival functions for the analysis of current status competing risks data. The asymptotic properties of the estimators are discussed.

Key Words: *Competing risks data, Current status censoring, Regression models, Sub survival functions.*

1. Introduction

In the analysis of medical or industrial data, the term competing risks refer to the situations in which a patient (object) is exposed to two or more causes of death (failure), but its eventual failure can be attributed to exactly one of these causes of failure. Examples for competing risks data in different scenarios can be found in Hudgens et al. (2001) and Sankaran et al. (2015) among

many others. Consider the general competing risks set up with k causes of failure. Let $T > 0$ be the lifetime variable and $C \in \{1, 2, \dots, k\}$ be the cause of failure for an individual. The analysis of competing risks data is carried out using any one of the following three formulations;

(i) Cause specific hazard rate function $(\lambda_j(t))$ formulations, where

$$\lambda_j(t) = \lim_{\Delta t \rightarrow 0} \frac{P(t \leq T < t + \Delta t, C = j | T \geq t)}{\Delta t} \quad j = 1, 2, \dots, k \quad (1.1)$$

(ii) Cause specific sub distribution function $(F_j(t))$ formulations (or cumulative incidence functions), where

$$F_j(t) = P(T \leq t, C = j) \quad j = 1, 2, \dots, k \quad (1.2)$$

and

(iii) Cause specific sub survival functions $(S_j(t))$ formulations, where

$$S_j(t) = \exp(-\Lambda_j(t)) \quad j = 1, 2, \dots, k. \quad (1.3)$$

Crowder (2001), Kalbfleisch and Prentice (2002) and Lawless (2003) provide review of literature on competing risks analysis using (1.1) and (1.2). We can note that, even though $S_j(t)$ are not the survival functions of any observable random variables they possess the mathematical properties of continuous survival functions hence known as survivor like function.

In survival studies, current status censoring or interval censoring case I occurs if each patient is observed only once at a

random monitoring time and only the information whether the event of interest has happened or not before the monitoring time is available. One could refer to Banerjee and Wellner (2005) and Koul and Aggarwal (2008) among many others for diverse applications of current status data. Jewell et al. (2003) studied the data on the menopausal history of 2423 women in the context of the current status competing risks set up. Covariates or explanatory variables are used in survival studies to represent the heterogeneity in the population of lifetimes. The well-known Cox proportional hazards (PH) model is employed for the regression analysis of current status data (Diamond et al., 1986 and Sun, 2006).

Current status data with competing risks in the presence of covariates arise naturally from cross sectional studies with several causes of failure. For example, consider the data on clinical trials for cancer diagnosis discussed in Hudgens et al. (2001). In the present paper we consider the estimation of sub survival functions of current status competing risks data in presence of covariates which is not discussed abundantly in literature. We follow the approach used in Haung (1996) and Sun (2006) in the analysis of noncompeting risks set up. The text is organized as follows. In Section 2, we propose a semi parametric regression model based on sub survival functions for the analysis of current status competing risks data. An estimation procedure for baseline sub survival functions and regression parameters is derived and the asymptotic properties of the estimators are discussed. Finally Section 3 summarizes major conclusions of the study.

2. Estimation

In this section, we propose a regression model based on sub survival functions for the analysis of current status competing risks data. The asymptotic properties of the estimators of regression parameters and sub survival functions are discussed. A test statistic based on cause specific hazard rate functions is derived to compare the effect of different causes on lifetimes.

We consider the general competing risks set up with k causes of failure. Under current status censoring scheme, each patient (object) is observed only once at a single random monitoring time $U \in R_+ = (0, \infty)$. The lifetime T remain unobserved and we only observe the 'current status' of the individual at time U (whether it has failed or not before time U) along with the corresponding covariate X . For the patients observed to be relapsed before time U , we also observe the corresponding cause of failure $C \in \{1, 2, \dots, k\}$. We assume that the monitoring time U is independent of both T and C and the censoring is non-informative. In addition, it is presumed that a patient (object) cannot fail from two or more causes at the same time and the cause of failure is readily available for relapsed patients. Note that the monitoring times of all patients (objects) need not be distinct. Thus for each individual we observe the vector $(U, \delta, C\delta, X)$, where δ is the indicator variable which take the value 1, if the individual is relapsed before time U and 0 otherwise.

To study the effect of the covariate on the lifetime, we propose a semi parametric regression model given by

$$S_j(t; X) = S_{0j}(t)^{\exp(\beta_j' X)} \quad j = 1, 2, \dots, k \quad (2.1)$$

where $S_j(t; X)$ is the sub survival function in presence of the covariate vector X for cause j , $S_{0j}(t)$ is the baseline survival function which is common to all patients, β_j is the $p \times 1$ vector of regression parameters for cause j . When β_j is a zero vector for some j , then the covariate does not influence failure due to cause j . We first consider estimation of the sub survival function when the lifetimes are subjected to current status censoring. The study consists of n subjects which may fail due to any of the possible k causes. Let $(U_i, \delta_i, C_i \delta_i, X_i); i = 1, 2, \dots, n$, be i.i.d. copies of $(U, \delta, C \delta, X)$. To estimate $S_{0j}(t)$ and β_j we follow the maximum likelihood approach given in Sun (2006). The complete likelihood of the observed data is given by

$$L = \prod_{j=1}^k L_j(\beta_j, S_{0j}) \quad (2.2)$$

In terms of $S_{0j}(t)$ and β_j , $L_j(\beta_j, S_{0j})$ the likelihood function corresponding to cause j is given by

$$L_j(\beta_j, S_{0j}) = \prod_{i=1}^n S_{0j}(U_i)^{(1-\delta_{ij}) \exp(X_i' \beta_j)} \left\{ 1 - (S_{0j}(U_i))^{\exp(X_i' \beta_j)} \right\}^{\delta_{ij}} \quad (2.3)$$

with δ_{ij} as the indicator function which takes the value 1 if the i th individual observed at U_i found relapsed due to cause j , and 0 otherwise.

The problem reduces to the maximization of $L_j(\beta_j, S_{0j})$ over all non increasing step functions with jumps only at U_i 's for $S_{0j}(\cdot)$.

Let $0 < s_1 < \dots < s_m$ be the ordered distinct time points of $\{U\}_{i=1}^n$.

Then $S_{0j}(\cdot)$ takes the form

$$S_{0j}(t) = \prod_{p: s_p \leq t} \exp(-\alpha_{pj}) \quad j = 1, 2, \dots, k \quad (2.4)$$

where $\alpha_j = (\alpha_{1j}, \dots, \alpha_{mj})'$ are unknown parameters. Now, the log likelihood of (2.3) can be written as

$$l_j(\beta_j, \alpha_j) = \sum_{i=1}^n \left\{ \delta_{ij} \log \left[1 - \prod_{p^i} e^{-\exp(\alpha_{pj} + X_i' \beta_j)} \right] - \sum_{p^i} (1 - \delta_{ij}) e^{(\alpha_{pj} + X_i' \beta_j)} \right\} \quad (2.5)$$

where \prod_{p^i} and \sum_{p^i} represent the product and summation over $\{p; s_p \leq U_i\}$ respectively. Define R_p as the set of individuals with monitoring time $U_i = s_p$ and D_{pj} as the set of individuals with monitoring time $U_i = s_p$ and found to be relapsed due to cause j .

Also define $a_{pj} = \sum_{p=1}^m \exp(\alpha_{pj})$ for $p = 1, 2, \dots, m$ and $j = 1, 2, \dots, k$.

Then the likelihood function (2.5) can be re written as

$$l_j(\beta_j, \alpha_j) = \sum_{p=1}^m \left\{ \sum_{i \in D_{pj}} \log \left[\frac{1 - e^{-a_{pj} \exp(X_i' \beta_j)}}{e^{-a_{pj} \exp(X_i' \beta_j)}} \right] - a_{pj} \sum_{i \in R_p} \exp(X_i' \beta_j) \right\} \quad (2.6)$$

Equation (2.6) can be maximized using Newton Raphson algorithm to get the estimates of β_j 's and α_{pj} 's for $p=1,2,\dots,m$ and $j=1,2,\dots,k$. The estimator of $S_{0j}(\cdot)$ for $j=1,2,\dots,k$ is obtained from (2.4) and by exploiting (2.1) we can also estimate $S_j(t;X)$, $j=1,2,\dots,k$ at any given covariate level $X = x_0$.

Now our interest focuses on the asymptotic properties of the estimators. Following Haung (1996) and Sun (2006), we prove asymptotic normality and consistency of the estimators. Assume following conditions;

- (a) There exists an x_0 such that the covariate X has $P[|X| \leq x_0] = 1$
- (b) For any $\beta_j \neq \beta_{j_0}$ the probability $P\{\beta_j' X \neq \beta_{j_0}' X\} > 0$ for $j = 1, 2, \dots, k$
- (c) The support of the censoring time U is an interval $I(U) = [l_c, u_c]$ and $0 \leq l_c \leq u_c \leq \tau_{S_{0j}}$ for $j = 1, 2, \dots, k$ with $S_{0j}(0) = 1$ and $\tau_{S_{0j}} = \sup\{t : S_{0j}(t) = 0\}$.

The Fisher information for β_j is given by

$$I(\beta_j) = E \left\{ P_j(U, X) \left[X - \frac{E(X P_j(U, X) | U)}{E(P_j(U, X) | U)} \right]^{\otimes 2} \right\}$$

where $a^{\otimes 2} = a'a$ for any $a \in R^d$ and

$$P_j(U, X) = \exp(-S_{0j}(\cdot))^2 (U|X) O_j(U|X) \text{ and}$$

$$O_j(U|X) = E \left[Q_j^2(\delta, u, x) | U = u, X = x \right] = \frac{S_{0j}(u|x)}{1 - S_{0j}(u|x)}, \text{ where}$$

$$Q_j(\delta_j, u, x) = \delta \frac{S_{0j}(u|x)}{1 - S_{0j}(u|x)} - (1 - \delta_j).$$

Consistency: Under the above regularity conditions (a) to (c), from Huang (1996, Theorem 3.2, page 547), we have

$$\hat{\beta}_j \rightarrow \beta_j \quad \text{a.s. for } j = 1, 2, \dots, k$$

In particular if the distribution function $G(U)$ of U_i 's is discrete, then

$$\hat{S}_{0j}(t) \rightarrow S_{0j}(t) \quad \text{for } j = 1, 2, \dots, k$$

almost surely at all mass points of G as $n \rightarrow \infty$ and if $G(U)$ is continuous as $n \rightarrow \infty$, one has

$$\sup_{0 \leq t < \infty} \left| \hat{S}_{0j}(t) - S_{0j}(t) \right| \rightarrow 0 \quad \text{for } j = 1, 2, \dots, k$$

almost surely.

Rate of convergence: Under the assumptions (a) to (c), the rate convergence rate of these estimators is given by

$$d \left((\hat{\beta}_j, \hat{S}_{0j}), (\beta_j, S_{0j}) \right) = O_p \left(n^{-\frac{1}{3}} \right) \quad \text{for } j = 1, 2, \dots, k$$

The overall rate of convergence is governed by the rate of convergence of \hat{S}_{0j} . The convergence rate of the estimates are shown to be $n^{1/3}$ which is slower than the usual convergence rate

\sqrt{n} , but which is similar to the convergence rate of distribution function of NPMLE of current status data which is studied by Gorenboom and Wellner (1992).

Asymptotic normality: Suppose that β_j is an interior point in the finite dimensional parameter space Θ . Suppose that the assumptions (a) to (c) are satisfied. Then

$$\sqrt{n}(\hat{\beta}_j - \beta_j) = I(\beta_j)^{-1} \sqrt{n} P_n l_{\beta_j}^*(m) + o_p(1) \rightarrow_d N(0, I(\beta_j)^{-1})$$

where P_n is the empirical measure of the triplet (δ_{ij}, U_i, X_i) and $i = 1, 2, \dots, n; j = 1, 2, \dots, k$, $l_{\beta_j}^*(m)$ is the efficient score function given by

$$l_{\beta_j}^*(m) = \exp(\beta_j' X) Q_j(\delta_j, u, x) \exp(-S_{0j}(u)) \left\{ x - \frac{E[X \exp(2\beta_j' X) O_j(U|X)|U=u]}{E[\exp(2\beta_j' X) O_j(U|X)|U=u]} \right\}$$

and $I(\beta_j)$ is the information for β_j for $j = 1, 2, \dots, k$ where m is a point on the parameter space.

Thus, it follows that the distribution function of the monitoring time U_i 's, $G(U_i)$ has bounded support $I_U = [\tau_0, \tau_1]$ with $\tau_0 > 0$. Furthermore, $S_{0j}(\cdot), j = 1, 2, \dots, k$ should have strictly positive and continuous density on I_U . Under these assumptions

$$\sqrt{n}(\hat{\beta}_j - \beta_j) \rightarrow N(0, \Sigma_j^{-1})$$

where Σ_j is the information matrix for β_j . The result from Huang (1996) also shows that $\hat{\beta}_j$ is also asymptotically efficient since its asymptotic variance achieves information lower bound.

3. Conclusion

In the present paper, we propose a semiparametric regression model based on sub survival functions for the analysis of current status competing risks data. The estimators of baseline sub survival functions and regression parameters were derived and asymptotic properties of the estimators were discussed.

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SEED VIABILITY AND GERMINATION STUDIES IN *MORINDA CITRIFOLIA*: A POTENTIAL MEDICINAL PLANT

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ABSTRACT

At present market, we got a lots of products prepared from Morindacitrifolia - Noni plants. The studies are going on about the plant and many scientists already discovered a lot of medicinal properties of the plant. Morinda has been heavily promoted for a wide range of uses; including arthritis, atherosclerosis, bladder infections, boils, burns, cancer, chronic fatigue syndrome, circulatory weakness, colds, cold sores, congestion, constipation, diabetes, drug addiction, eye inflammations, fever, fractures, gastric ulcers, gingivitis, headaches, heart disease, hypertension, immune weakness, indigestion, intestinal parasites, kidney disease, malaria, menstrual cramps and irregularities, mouth sores, respiratory disorders, ringworm, sinusitis, sprains, stroke, skin inflammation and wounds. Morindais reputed to have antibacterial, antiviral, antifungal, antitumor, anti tubercular effect, analgesic activity, immunological activity, mental health and improve high frequency, antihelminthic, analgesic, hypotensive, anti inflammatory, immune enhancing etc., Present study reveals that the seeds showed 50% of viability in Tetrazolium test. The result of the present study showed that all the germination method tested result was nil within the stipulated time. The germination of noni seeds is a very difficult task and this reveals that further studies are needed for their germination process.

Key words: *Morindacitrifolia*.seed viability, seed germination

Introduction

Plants are the reservoirs of a large number of imperative organic compounds and they have long been used as the sources of medicines. Dependence on plants is prevalent in developing countries where the traditional herbal medicine plays a major role in health care and in the treatment of many infectious diseases. The rural population of a country is more disposed to traditional ways of treatment because of its easy availability and cheaper cost. Herbal therapies although still an unwritten science is well established in some cultures and tradition and have become a way of treatment in almost 80% of the people in rural areas, especially those in Asia, Latin America and Africa. Among the medicinal plants discovered by the ancestors of Polynesians, Noni (*Morinda citrifolia*) is one of the important traditional folk medicinal plants that have been used for over 2000 years in Polynesia. It has been reported to have a broad range of therapeutic and nutritional value. Of the 12 most common plants they brought, Noni was the second most popular plant used in herbal remedies to treat various common diseases and to maintain overall good health (Krauss, 1993). The fruit of this plant has been used as food, drink, medicine, colorful dye, cosmetics purpose and has a high demand in medicines for different kinds of illnesses like diabetes, high blood pressure, AIDS, arthritis, cancer, gastric ulcer, sprains, mental depression, senility, poor digestion, atherosclerosis, blood vessel problem etc., Its root, leaves, stem, bark, flowers and fruits are recorded as herbal remedies for different diseases (Wang et al., 2012).

Morinda citrifolia is reputed to have antibacterial, antiviral, antifungal, antitumor, anti tubercular effect, analgesic activity,

immunological activity, mental health and improve high frequency, antihelminthic, analgesic, hypotensive, anti inflammatory, immune enhancing etc., Due to its beneficial effects, the fruit juice of *M. citrifolia* is widely distributed throughout the world as nutraceutical dietary supplement. The leaf of this plant is directly used on skin for ulcerations and for minor infections (Duke, et al., 2002). Morinda has been heavily promoted for a wide range of uses; including arthritis, atherosclerosis, bladder infections, boils, burns, cancer, chronic fatigue syndrome, circulatory weakness, colds, cold sores, congestion, constipation, diabetes, drug addiction, eye inflammations, fever, fractures, gastric ulcers, gingivitis, headaches, heart disease, hypertension, immune weakness, indigestion, intestinal parasites, kidney disease, malaria, menstrual cramps and irregularities, mouth sores, respiratory disorders, ringworm, sinusitis, sprains, stroke, skin inflammation and wounds (Elkins,1997). The primary indigenous use of this plant is leaves as a topical treatment for wound healing. Several animal studies suggest noni may have anti-cancer (McClatchey 2002), immune enhancing and pain-relieving properties (Hiramatsu T, 1993). Most recently Takashima et al. 2007 demonstrated the medicinal uses of new constituents isolated from noni leaves and used traditionally to promote wound healing.

Therefore, one of the challenges in recent years has been to process fruit juice so as to make a more modern drug from a traditional product. Day by day the market value of this plant increases and the acceptability of this also increases. So in a parallel view the propagation of this plant is also important. The fruit is a multiple fruit and it possesses many seeds. So we think it is a good propagation method through seeds. But in the natural

environment the ratio between the number of seeds and germination of seeds shows a great variation through field study. This encourage us to took this problem as our work for study.

Objectives of the present study

- Study the nutritional and medicinal properties of *Morindacitrifolia*
- Testing the seed viability
- Study seed germination methods



Fig.1: *Morindacitrifolia* Habit

Materials and Methods

During this period of our work we had visited the study area on the months December, January, and March. Our study area was at *ThiruthipuraminErnakulam* district. On December itself we collected the twigs with Leaves, flowers and fruits for our study. It brought to laboratory studied the taxonomic and floral characters. The seeds were separated from the ripened fruits and dried in natural conditions. These dried seeds were used to our study. Some

of the seeds were seen as papery so as to more clarification, we done viability test. For that we took 400 seeds and checked the viability using Tetrazolium test.

Seed Viability Test

Tetrazolium test

This method determines the percentage of the viable seeds, which may be expected to germinate. The chemical 2, 3, 5 Triphenyltetrazolium chloride, tetrazilium chloride in short, is colourless, but it develops intense red colour when it is reduced by living cells. This phenomenon is used to determine the percentage of viable seeds in a seed sample. Seeds are soaked in tape water over night and are split longitudinally with the help of scalpel so that a portion of the embryo is attached with each half of the seed. One half of each seed is placed in a petri dish and covered with 1% aqueous solution tetrazolium chloride for 4 hours. The seeds are then washed with tape water and number of seeds inwhich the embryo is stained red is determined. The percentage of viable seeds is computed as follows

$$\text{Viable seeds} = \frac{\text{No.half seeds stained red}}{\text{Total no.of half seeds}} \times 100: \frac{230}{400} \times 100 = 57.5\%$$

Seed Germination Studies

Mechanical methods

1. Scarification using sand paper

Scarification was done by using sand paper to reduce the thickness of the seed coat .After scarification seeds were sowed.

2. Making cut on seed coat

By making cut on the seed coat may helps to sprout out the seedling easily. Noni seeds can be clipped using an ordinary fingernail clipper to create an opening in the tough seed coat, so that water and air may enter and contact the embryo. This clipping can increase the germination percentage and also reduce the time required for germination from several months to only 4 weeks or more .Seeds clipped using fingernail clipper and sowed in sand.

Acid treatment

Acid treatment is one of the method for germination studies. For that the number of seeds were treated in Hcl in different concentrations such as 90%,80% and 70% and all the seeds were potted.



a) 70% HCl



b) 80% HCl



c) 90% HCl

Fig. 4: Noni seeds treated with HCl

Results and Discussion

Seed viability Test

Morindacitrifolia seeds showed 50% of viability in tetrazolium test. The tetrazolium method is faster than germination test and does not require a controlled environment, which is necessary for germination test. In addition, it is relatively cheaper than germination test. But it cannot be applied to all species particularly to those species that have very small seeds and embryos because splitting and examination of such seeds tedious.

Seed germination

The result of the present study showed that all of the above cases the germination result was nil within the stipulated time. Dormancy is a condition where seed will not germinate even when the environmental conditions (water, temperature and aeration) are permissive for germination (Hartmann, 2002). In nature, different kinds of primary dormancy have evolved to aid in survival of species by programming the time of germination at a particular favorable period in the annual cycle (Alwater, 1980). Seed dormancy is an evolutionary adaptation to delay germination after the seed has been shed from the plant. Seed with physical dormancy fail to germinate because the seed will be impermeable to water (Hartmann, 2002). Physical dormancy is most often caused by a modification of seed covering, especially the outer integument layer of the seed that may become hard, fibrous and mucilagenous during dehydration and ripening. Noni seeds can require from 2-6 months germinating without treatment. When seeds are clipped and placed under optimum germination conditions, the time required for seed

germination can be reduced to 4-6 weeks. (Scot C. Nelson 2003). Germination time for scarified noni seeds is 2-120 days depending up on the temperature , environment and variety of genotype. Noni seeds can germinate in conditions ranging from deep shade to full sun, warm, moist and light conditions are beneficial for optimal germination ((Scot C. Nelson 2003). Temperature during germination of noni seeds is perhaps the most critical factor, aside from moisture. At lower temperatures, more time is required for germination. Noni has an extremely wide range of environmental tolerances and is robust enough to germinate in nature under very harsh conditions.

From these studies it is easy to understand that the germination of noni seeds is a very difficult task and this reveals that further studies are needed for their germination process.

Summary and Conclusion

From our studies it is easy to understand that *Morindacitriifolia* seeds showed 50% of viability in tetrazolium test. The germination of noni seeds is a very difficult task and this reveals that further studies are needed for their germination process. The fruit juice of *M. citrifolia* L. is in high demand in alternative medicine for various illnesses, such as arthritis, diabetes, high blood pressure, muscle aches and pains, menstrual difficulties, headaches, heart disease, Acquired Immune Deficiency Syndrome (AIDS), cancer, gastric ulcers, sprains, mental depression, senility, poor digestion, atherosclerosis, blood vessel problems and drug addiction. The nutritive and medicinal values of the *Morinda* spp. have been clearly established with the research outcome that was completed in different laboratories in abroad. In India, the awareness on the importance of

Noni has just come with the public and also with the scientific community. Hopefully furthermore useful and vital information will be emerged out of the research activities initiated on this wonder tree, Noni. Seed germination and commercial rapid seedling production in large scale would be essential for making many wonderful drugs from noni for health care.

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ISSN: 2349 - 0217

Volume 7 Issue 1 July 2015

CARMEL BLAZE

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