IMPACT FACTOR SJIF 2016 = 6.177 **UGC Approved Sr. No.49366**
ISSN 2278-8808

AN INTERNATIONAL, PEER REVIEWED, QUARTERLY

SCHOLARLY RESEARCH JOURNAL FOR INTERDISCIPLINARY STUDIES

Amitesh Publication & Company,
TCG's, SAI DATTA NIWAS, S. No. 5+4/ 5+4, D-WING, Flat No. 104, Dattnagar, Near Telco Colony, Ambegaon (Kh), Pune. Maharashtra. 411046. India.
Website: www.amiteshpublishers.in, www.srjis.com
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An International Peer reviewed
Scholarly Research Journal for Interdisciplinary Studies

ANNUAL SUBSCRIPTION: Individual Subscription Rate: ₹750 (Print Only); 150$; £80. Combined Subscription Rates for Online as well as Print ₹1850, 300$; £160.Individual Subscription Rate (Print & Online access): ₹3525/- for Five Year. Institutional Subscription Rate (Print & Online access): ₹ 5025/- for Five Year. If the manuscript posses Multiple Author the subsequent Price is ₹ 650 for per author. The said prices include postage. Institutional subscription includes the right for members of subscribing the institute to access the online journal no extra charges will be applied from SRJIS. Summary of the publication charges is mentioned below.

PUBLICATION FEE: Subscription fee should be directly Deposited / Transferred/ D. D through SBI Net Banking in favors of **Int. Scholarly Research Journal**, *Account No: 32806695852 Branch: Ambegaon (Bk). Pune, Maharashtra. INDIA, IFSC Code: SBIN0011648. MICR: 4110020, SWIFT CODE: SBININBB238.*

Content	Online	Print	Total	Duration
Non Member	₹ 1300/	₹ 650/-	1950/-	One Issue
Individual Membership	₹ 525/-	₹ 3000/-	3525/-	Three Years
Institutional Membership	₹ 2000/	₹ 3025/-	5025/-	Five Years

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PERIODICITY: QUARTERLY (JAN-MAR, APR-JUNE, JULY-SEPT, OCT- DEC)

CHANGE IN POSTAL ADDRESS: One month notice for change in address should be communicated, notified by Sending old postal address and current postal address to Editor in Chief by specifying the Journal Name and ISSN number through postal or
e mail: srjisarticles16@gmail.com
Printed and Published by **Mrs. Supriya Y. Netragaonkar** on behalf of Scholarly Research Journal for Interdisciplinary Studies.

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SJIF 2016 = 6.177 **UGC APPROVED SR. NO. 49366**
ISSN 2278-8808

An International, Peer Reviewed, & Referred Quarterly
Scholarly Research Journal for Interdisciplinary Studies

APRIL- JUNE, 2018, VOL-7 ISSUE-42

SUSTAINABLE ENERGY AND TECHNOLOGY

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Sustainable energy is the energy required for some considerable purposes, which can be utilised at insignificant rates exclusive of affecting its source and reserve, and without adjudication with the present or the requirements of the future generations. These energy sources include energy from renewable resources such as solar and wind energy, and energy from biomass. The fossil fuels such as coal, oil and gas constitute 80.1% of the total energy supply with 13.6% from renewable sources and 6.3% of the nuclear energy (1). Utilising sustainable energy for the future will replenish the global need energy. Such energy changeover would require essential innovations in a new fleet of dedicated and expert researchers and technologists in the development, optimization and incorporation of the renewable energy sources (2). The production of energy from new sources would also require new storage facilities, such as batteries to suit the storage of energy from sustainable sources. The energy would be required to be integrated into the existing power networking (3).

Access to technology

It is quite challenging to secure the energy for future using the existing technology and even with modernization of the equipments. Securing energy from such sources can be accomplished using innovative technologies, which can be formed as a result of various research projects through chemical processes and use of relevant materials. It will aid in the transfer of energy in between the fuels, light and electricity (4). Such innovative technologies will bring change by extracting energy from the sunlight, carbon-dioxide and water. It will also generate electricity from the wind, water and nuclear plants. This will promote the utilization electricity-driven cars and light motors by using batteries and fuel cells. The technology will function to convert sunlight and wind to high efficiency electricity and enabling its storage in batteries and super-capacitors with more than 10 times the density of that is used at the present day (1).

Operation of coal-fired and nuclear power plants at higher temperature requires atoms with nano-scale structures, where each atom will have a specific function. This has enabled the spontaneous flow of energy from the chemical bonds, light and the electrons. A technology which can produce electricity is capable of producing hydrogen by the means of an electrolyzer (1). Electrolysis can supply energy and hydrogen from the solar and wind energy. The photobiological and the photochemical technology are used for hydrogen production. These technologies produced hydrogen from sunlight and water directly, and also increases the efficiency of solar to hydrogen pathway (4).

Solar power

At the present day with the existing technologies, the solar power is estimated to support about only 5% of the total energy requirements of the US. The first generation solar cells are made of crystalline silicon cells, which are used at the present day. The second generation cells are based on thin film cells and photoactive light-sensitive materials and also cells made of photo-sensitive dyes and low cost oxide semiconductors (4). To combat the power requirements by 2050, a very high conversion efficiency cells in a low cost are required. The third generation solar cells are still under research, which are made up of different semiconductor cells and are about 200 times as expensive as the first

generation solar cells. Further research is required for the development of high efficiency and cost-effective solar cells to meet the requirements of the people in the upcoming years (1,5).

Managing carbon from the environment

It is essential to manage the carbon dioxide emitted from various sources, including the burning of the fossil fuels. Reduction of carbon from the atmosphere is a crucial factor to maintain healthy living (2). Trapping and storing the carbon-dioxide by compression to prevent its harmful effects. It can be stored at a geographical location by injecting it into the ground. Although it may be harmful to store the gas under the earth due to the risk of drinking water contamination, conducting research may help in proper utilization of the trapped gases (1,5).

Use of ethanol as a sustainable energy source

Sugarcane ethanol is can be used as motor gasoline after 30 years of its production and is used over the world. The production of ethanol from cellulosic materials will help in reducing the cost of ethanol production and bring forward numerous chances of utilizing biomass and woods for the production of ethanol (2). The use of biogas from the conversion of landfills with solid wastes, industrial wastes, manures and water with the help of microorganisms will help in reducing the expense of fossil fuels for the production of energy. The planted forests can also be utilized for the production of electricity instead of using coal or other fossil fuels, by direct combustion, gasification or the use of gas turbines. Further research is required to confirm the effectiveness of these methods priory of the production phase (6).

Hydrogen production

In the 1930's Rudolf Erren suggested the production of hydrogen by water electrolysis, to be used as transport fuel. The main purpose of production of energy from water is to reduce the emission of harmful gases to the environment and produce hydrogen for energy and transportation to enable energy security for the future generations. Hydrogen can be generated from water, biomass or coal. Coal gasification is considered as the most reliable source due to its low cost and and abundancy. Since, the utilization or depletion rate of coal is high and formation takes hundreds of years, it is necessary to arrange alternative source of energy.

Electrolysis of water, wind, biomass and geothermal energy are considered as sustainable sources of energy. Biomass processing is greatly accepted since years due to its ability to convert liquid and gseous fuels. Although biomass can easily be converted to methanol, ethanol and biodiesel, which can be further processed to form hydrogen, it is not capable of supply in abundance. Water can yield high amount of hydrogen and oxygen on electrolysis. It requires a higher temperature of $<2000^0$C (5). Using sulphuric acid and hydrogen iodide can contribute to generation of hydrogen in multiple steps under the operating conditions. Water and wind can produce electricity in the sufficient quantity due to its suatainability. Sustainable hydrogen can be produced using technologies such as photobiological and photo-electrochemical methods (6). These methods can help in producing hydrogen directly from water and sunlight. It increases the efficiency of solarto hydrogen pathway and reduces the cost of the process. The process requires sufficient amount of land for the collection of sunlight. It may also utilize sea water instead of pure water thereby reducing the total cost (5).

Advancement in nuclear power systems

Nuclear power is considered as a carbon-neutral energy source, which would prevail over the challenges such as management of nuclear wastes, proliferation of nuclear weapons and increased demand of sustainable fuel. It will also confront the demand of safe and improved efficienct of nuclear power (5,1). It will involve the capability of controlling the structure of materials at the nanoscale and enable researchers and engineers to provide the solutions using highly advanced

computational toos. The tools incude advanced synchrotron X-ray sources, neutron sources and advanced super computers (1).

Conclusion

There are various techniques of reducing the utilization of the conventional energy. Sustainable energy sources include use of water, wind, fossils and nuclear energy. The innovative methods and chemical processes involved in bringing the change in the technology. Although the procedures are quite complex, the processes include the conversion of energy from one form to another such as, conversion of water to hydrogen and oxygen, and chemical reactions of the biomass for the production of fuel. It also helps in reducing the cost of energy production and provide access to the required amount of energy to the future generations.

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TOURISM AND TOURIST PERSPECTIVE VIEW OF ALIBAG TEHSIL A GEOGRAPHICAL RESEARCH

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Abstract

Alibag is a small town along the western coast of Maharashtra, Alibag lies in the Konkan region and belongs to the district of Raigad. It is close to the famous metro of Mumbai. Surrounded by water on three of its four sides, Alibag is home to several beautiful beaches. All its beaches are lined with amazing coconut plantations and betel nut trees, giving it a typical tropical beach feel to the entire region. Nature is at its very best here, with the beaches seemingly untouched and virgin. The air that you breathe in is fresh, while the exotic sight that these beaches provide are nothing less than heavenly. While the Alibag Beach pleasantly surprises you with its black sand, the Kihim and Nagaon Beach are replete with silver-white sand. Akshi Beach is another beach that is a must visit. Several ads, serials and movies have been shot on these beaches, here at Alibag. One may also be lucky to bump into one of the many Bollywood celebrities who own farmhouses and bungalows here. Since Alibag is a beach town, all the local delicacies here are fish based. Amongst the pomfret and surmai dishes, sol kadhi is another favourite out here. The beaches in Alibag are the perfect place to spend a quiet, fun-filled weekend with your loved ones, strolling the beach, or playing in the water, or simply watching the evening sun set into the sea at a distance.

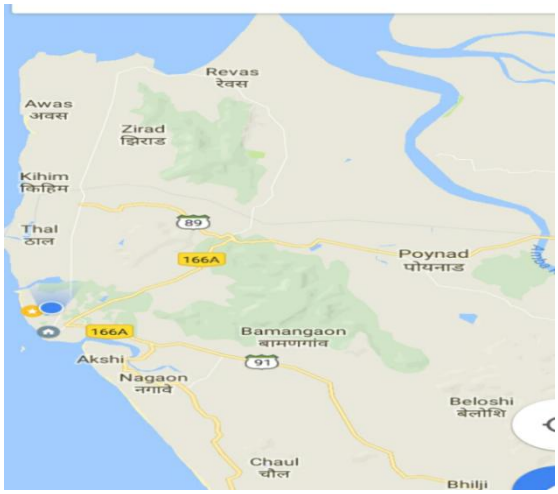
Keywords*:- Tourism, Tourist, Beeches, Forts etc.*

Introduction:- Alibag is a small town located in the Konkan region of Maharashtra. Often considered as a weekend getaway for the tourists, Alibag is equipped with few of the most beautiful picnic spots of Maharashtra. The town is named after a wealthy Israeli who owned several fruit orchards here, hence the name Ali's Bag (garden) or Alibag. Historical forts, continuous web of beaches, untouched aquatic life and lush green gardens are some of the most attractive features of this town. Alibag has developed itself as a major trade centre in the past few years and thus a significant number of businessmen visit this city on a regular basis. This town is often regarded as the island town of Maharashtra as it beautifully meets the waters of Arabian Sea on three of its sides.

Objective:-

1) To study various beautiful places in Alibag
2) To study present situation future scope of coastal tourism the region.
3) To study spatio-temporal changes in Alibag tourism.

Study Area:- The Alibag tehsil has the shape of a triangle with its base in the Konkan region in the western coast in India. It is located about 120 km south of Mumbai, at 18°38′29″N 72°52′20″E. The average elevation is 0 meters.



(The map of the Alibag Tehsil)

Data base and Methdology:-

The present study depend upon the secondary data. It was collected from the Raigad district tourism report, Alibag tourism and Indian tourism report.

Discussion:-

Alibag beach:

This is the main beach. A very flat stretch makes for a long walk. It is reasonably clean and has thin crowds during the week. The sand has a hard texture and is a shade of black. It is not easy to create sand castles. The tide rolls in from all sides You may have to wade through water on the way back.

Siddheshwar Mandir near Khandale:

This is a famous Shiva temple near picturesque hills near village Khandale just 4 km from Alibag-Pen state highway. You can drive your vehicles near to hillocks and with small trek you can reach this beautiful temple. During Shrawan month, hundreds of people throng to worship here during Shrawani Somwars. If you travel further you can see the remains of ancient fort called " Sagargad".

Alibag Fort:

Alibag is the seat of District Administration of Raigad (formerly Kolaba) district since 1852. The name Kolaba is attributed to a sea fort built by Shri Chatrapati Shivaji Maharaj the great in 1680 to fight the mighty naval prowess of the Siddis (Abyssenians) of Janjira and the British of Mumbai. Kolaba fort is famous for many battles, between Siddis and Kanhoji Angre, the British and the Portuguese. It is also famous for lord Ganesh temple and Dargha

Khanderi and Underi Islands :

A few kilometers from the Kihim Beach one can visit Khanderi and Underi islands. They are heavily fortified and built by Shivaji as sea observation posts in 1660 CE to keep a check on the Siddis at Murud-Janjira fort. Later on it lost its importance. Most of the fort is intact. The most prominent structure is a lighthouse built in 1837 which is still in service and used for sea navigation.

Magen Avot Synagogue:

There was once a large Jewish community in Alibag; most of them were oil pressers and sellers. Bet El Synagogue is the only one in Alibag. Viceroy Lord Curzon (1899-1905) visited this synagogue. This place had been place of worship for the Jewish community; it was where community centre, Konkan development programmes and village meetings were held. The synagogue is a heritage property with a unique style and is a well-known Indian Jewish and Konkan tourist point.

Varsoli Beach:

About a mile from the main beach, it is home to a large naval base. It is on the outskirts of Alibag. It is relatively less-visited site. It is a quiet beach with sparkling white sand and cleaner seawater. Varsoli is a small satellite village across Alibag, complete with thick vegetation of coconut and casuarina.

Akshi Beach:

The beach is a favourite spot for advertising, TV serial and film shoots. This beach is well-suited for children and waders as the sea is flat for a long distance. One can walk through to a considerable distance toward the sea.

Nagaon Beach:

This black-sand beach is about 10 km from Alibag and is famous for coconuts and betel nuts. One can walk on the beach from Nagaon beach to Akshi beach in ten minutes. It is more popular for its water sports and most of the tourists coming to Alibag stay near Nagaon beach. It is the cleanest beach among Varsoli beach and Kashid beach too. Below is the image of the Nagaon beach.

Kihim-Navgaon Beach:

Kihim is a secluded place at a distance of approximately 10 km from Alibag. The Kihim beach is famous for dense cover of coconut trees. Another occupation of their people is agriculture for woods that are home to rare butterflies, birds and flowers.

Saswane:

It is about 18 km from Alibag and famous for Karmarkar sculpture and Clean Beach.

Rewas:

It is about 25km from Alibag. From Rewas, there is a ferry boat service to Mumbai (bhaucha Dhakka) and to Uran (Karanja).

Revdanda:

It is situated about 17 km from Alibag. The long sea cost called "REVDANDA BEACH" is tourist attraction place. It is famous weekend tourist spot.

Kanakeshwar Mandir:

It is about 17 km from Alibag to Karlekhind – Chondi road, 13 km from Alibag to the northeast. This very famous Shiv temple on a 900 ft. high hill. It is a 5000-foot climb on well-paved stairs, which takes around one hour. Landmarks along the route are tombs of MohanGiri and Balgiri, Nagoba Rest, Jambhali Plateau, God's stair, Gaymandi etc. The scenic temple premises comprises small temples of Sri Paleshwar, Sri Hanuman, Sri Balram Krishna and Lord Shiv. The special attraction is an ancient sweet water tank enclosed in traditional structure of black stone. The ancient temple was built by Raja Ramdeorai yadav. The height of the Shiv temple is 54 ft. The front gate has lion sculpture on both sides with traditional lamp-pillar (deepmaal) in front. The 4-foot 'pindi' of Lord Shiv is silver-plated. The premises also include Nagaar-khana, Bheem Kunda, a garden for flowers to be offered to the Lord, Sri Ram Ganesh temple and Gomukha. Every year, there is a fair on Kartik Poornima in Hindu calendar. On this hill, a variety of herbs are found.

Mandawa:

It is situated about 17 km north of Alibag. The catamaran/ferry services are available from Mumbai to the Mandawa jetty. Many Bollywood celebrities own bungalows here.

Kashid Beach:

It is 49km from Alibag, on the Alibag-Murud highway, also this beach is possibly one of the cleanest and most beautiful beaches in the region with almost 'white' sand. There are many cottages and resorts available ranging from around INR 1500 to INR 20,000. Prakruti resort is the luxury and the costliest of all. This village does not have any wine shops. One has to go around 6 km towards Murud to buy alcohol. Kashid is the perfect place to relax for urban people. One can find water sports facility and number of small shops for snacks. There is a danger board warning people of dangerous tides.

Korlai Beach:

A quiet serene beach with alternate white and black sands, along a serene stretch of the Arabian coastline, adjacent to a village of Korlai Creole Portuguese-speaking Indians. Just across the bridge, to the right there is Korlai fort within the sea and attached to the mainland by a narrow land strip through the Korlai fort through the Korlai Village. It is supposed to have been built by the Portuguese in 1521. The main gate has an inscription which means 'no entry without a fight'. The fort has seven gates, a sweet water well, a church in disuse, a Hindu temple and a lighthouse which is still used for navigation.

Conclusion:-

1) Alibag tehsil has great tourism potential for the development of tourism.
2) Beaches are prime attraction of Tourists.

3) Alibag tourism is provide more facilities to tourist, like hut cottage, boating, parasailing, entertainment and best of the Konkani test. etc.
4) Alibag is the coastal town, and one of the tourist destination in India.

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ANALYSIS OF WATER QUALITY USING PHYSICO-CHEMICAL PARAMETERS OF DRINKING WATER SOURCES OF MURUD NAGARPARISHAD AREA DISTRICT-RAIGAD, MAHARASHTRA, INDIA

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Abstract
The water sample from different drinking water resources of Murud Nagarparishad area was analyzed for their physicochemical characteristics. Laboratory tests were performed for the analysis of samples for Temperature, pH, Electrical conductivity, TDS, Alkalinity, Chloride, DO, BOD, Total hardness, Calcium hardness, Magnesium hardness and Salinity were analyzed in the month of December 2017. By observing the result it can be concluded that the parameters which were taken to study the water quality are below the pollution level for water which satisfies the requirement for the use of various purposes like domestic, agricultural etc. The usefulness of these parameters in predicting dam water quality characteristics were discussed.
Keywords: *Drinking water resources, water quality standard, Physico-chemical Parameter.*

INTRODUCTION:

Water is one of the most important and abundant compounds of the ecosystem. Physico chemical parameter study is very important to get exact idea about the quality of water and we can compare results of different physico-chemical parameter values with standard values. It is very essential and important to test the water before it is used for drinking, domestic, agricultural or industrial purpose [1]. Ground water contributes 0.6% of the total water resources on the earth is the major source of drinking and agriculture water in rural and urban areas [2]. The quality of ground water depends on various chemical constituents and their concentration. It is very essential and important to test the water before it is used for drinking, domestic, agricultural or industrial purpose. Water must be tested with different physic-chemical parameters. Selection of parameters for testing of water is solely depends upon for what purpose we going to use that water and what extent we need its quality and purity [3-5]. Water does content different types of floating, dissolved, suspended and microbiological as well as bacteriological impurities. Some physical test should be performed for testing of its physical appearance such as temperature, color, odour, pH, turbidity, TDS etc, while chemical tests should be perform for its BOD, COD, dissolved oxygen, alkalinity, hardness and other characters [6-8].

Prabhakar R. Pawar and Balasaheb G. Kulkarni [9] have studied assessment of water quality in the karanja creek (Raigad). Budharatna Bhavare, Miguel A. Rodriguez, Anil Kurthe [10] has studied different physic chemical parameter and nutrients in water of Bhatye estuary, Ratnagiri central, West coast of India. Francis Andrade, H.B. Arvinda, and E.T. Puttaiah [11] have studied Manglore coastal water pollution by analysis of physical, chemical parameter. Ramalingam manikannan, Subramanian asokan and A.H.M.S. Ali [12] have studied Seasonal variation of physicochemical properties of the great vedaranyam swamp point calimere wildlife Sanctuary, South east coast of India. Sujata Sen, Dr. Minal Kanti Paul, and Madhab Borah [13] have studied the some physico chemical parameter of pond and river water with reference to correlation study. G.Velsamy,

N. Manoharan, S.Ganesan [14] has studied analysis of physicochemical variations in sea water sample Uppanarestuary, Cuddalore, Tamilnadu (India).

Murud-Janjira is the local name for a fort situated on an island just off the coastal village of Murud, in the Raigad district of Maharashtra, India. **Murud** is a taluka city and a municipal council in Raigad district in the Indian state of Maharaashtra. Situated at a distance of 42 km from Alibag, Murud is a tourist destination. The Palace of Nawab is located in Murud. The palace was built in 1885 for administration purposes. The palace is still owned by the descendants of the Nawab and is a private property.

The water sample such as Pipe water, bore well water and well water was collected early in the morning between 8.00 am to 10.00 am and was analyzed to compare the differences occurred in Physico-chemical parameters such as Temperature, pH, Electrical conductivity, TDS, Alkalinity, Chloride, DO, BOD, Total hardness, Ca-hardness, Magnesium hardness and Salinity.

The research work is carried out, keeping in mind the following objectives.

- To study the chemical composition and water quality parameters of different sources.
- To investigate the possible sources and Cause of pollution in the water if any.
- To study if these effects can be attributed to the change in the chemical composition of the different water sources.

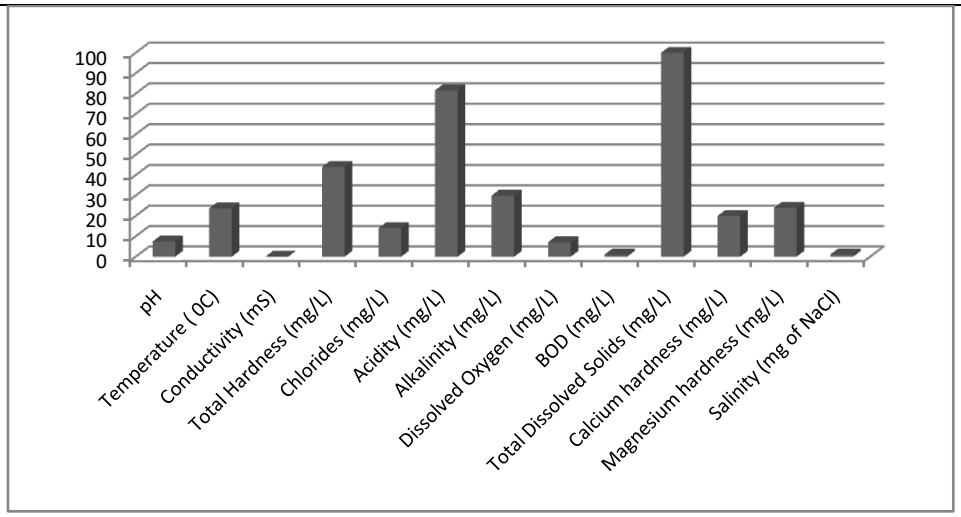
MATERIAL & METHOD:-

Sample of water was collected in sterile plastic bottle of 2 litre capacity from the dam. At the same time the temperature & pH were noted. The physico-chemical analysis was carried out within 24 hours of collection in a laboratory as per APHA (1989), (1992), AWWA & WPFA, Trivedy & Goel (1986) [15-16]. The chemicals were used of A. R. grade and are standardized as per Inorganic quantitative analysis by Vogel (1964) & (2006) [17-18]. The result is statistically analyzed by calculating mean & standard deviation.

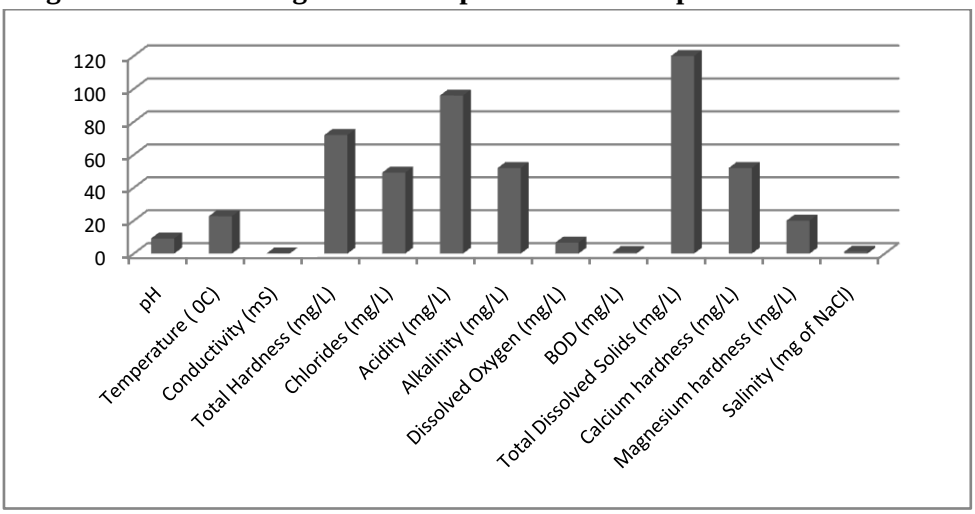
RESULTS & DISCUSSION:-

Parameters	**Tap water Mean+S.D**	**Bore well water Mean+S.D**	**Well water Mean+S.D**
pH	7.47 + 0.02	9.20+ 0.02	7.13+ 0.02
Temperature (^{0}C)	23.7 + 0.3	22.7 + 0.3	24.7 + 0.3
Conductivity (mS)	0.109 + 0.002	0.126 + 0.002	0.418 + 0.002
Total Hardness (mg/L)	44 + 1.0	72 + 1.0	240 + 1.0
Chlorides (mg/L)	14.05 + 0.18	49.15 + 0.18	29.13 + 0.18
Acidity (mg/L)	81.6 + 0.3	96.0 + 0.3	106.3 + 0.3
Alkalinity (mg/L)	30 + 0.3	52 + 0.3	206 + 0.3
Dissolved Oxygen (mg/L)	7.126 + 0.015	6.716 + 0.015	7.436 + 0.015
BOD (mg/L)	1.081 + 0.03	0.953 + 0.03	1.117 + 0.03
Total Dissolved Solids (mg/L)	100 + 1.0	120 + 1.0	215 + 1.0
Calcium hardness (mg/L)	20 + 0.3	52 + 0.3	136 + 0.3
Magnesium hardness (mg/L)	24 + 0.3	20 + 0.3	104 + 0.3
Salinity (mg of NaCl)	1.172 + 0.003	1.162 + 0.003	1.182 + 0.003

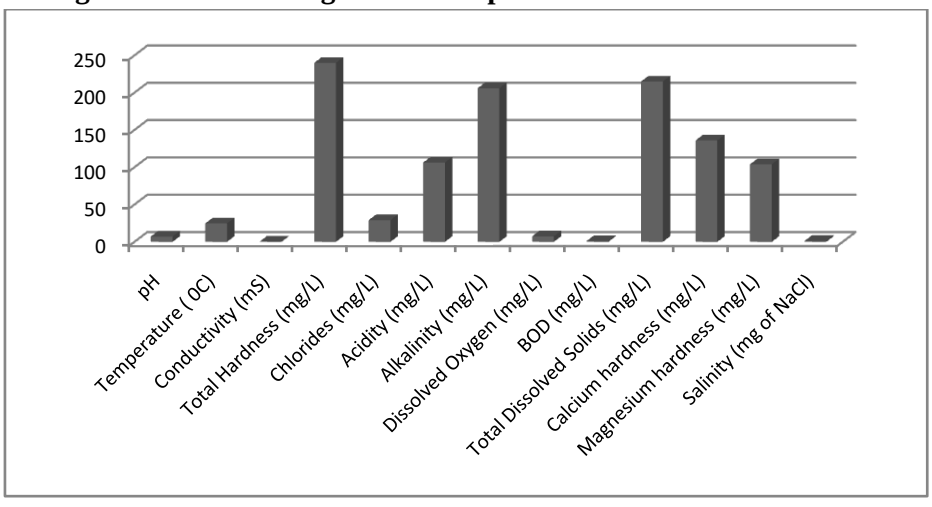
Table-1:- Values of different parameters of water sample of different drinking sources in Murud Nagarparishad area. (Mean and Standard deviation is calculated)



a. Graph showing concentration range of various parameters of Tap water.



b. Graph showing concentration range of various parameters of bore well water.



c. Graph showing concentration range of various parameters of well water.

1. Temperature:

Temperature is the most importance environment factor with effect on plants and animals. Water has several unique thermal properties which combine to minimize temperature change. The Water temperature depends on the depth of the water column, climatic and topographic changes [19].

A rise in temperature of water leads to the speeding up of chemical reactions in water, reduces the solubility of gases and amplifies the tastes and odour. At higher temperature with less dissolved gases the water becomes tasteless and even does not quench the thirst and decreases the solubility of oxygen.

Temperature also determines various other factors such as pH, Conductivity, saturation level of gases and various forms of alkalinity. The temperature of Tap water is 23.7+0.3 ^{0}C, bore well water temperature is 22.7+0.3 ^{0}C and temperature of well water is found to be 24.7+0.3 ^{0}C.

2. pH:

pH, one of the most common analyses in soil and water testing, is the standard measure of how acidic or alkaline a solution is. pH has no direct adverse effect on health. pH governs the distribution, transport and fate of heavy metals in aquatic ecosystem. It is measured a scale from 0 - 14. pH of 7 is neutral, pH is less than 7 is acidic and pH greater than 7 is basic. Aquatic organisms need the pH of their water body to be a certain range optimal growth and survival.

The pH of Tap water is 7.47 + 0.02, bore well water pH is 9.20 + 0.02 and pH of well water is found to be 7.13 + 0.02. Amongst these three samples, bore well water is comparatively basic in nature.

3. Electrical Conductance:

Conductivity is the measure of a substance or solution to conduct electric current. Presence of salts and contamination with wastewater increases conductivity of water. It is a indication of pollution. Electrical conductivity used to quickly estimate the ionic or soluble salt concentration in soils, water supplies, fertilizer solution and chemical solution. It is highly depended upon temperature.

Conductivity however is an important criterion in determining the suitability of water for irrigation. The conductance of Tap water is 0.109+ 0.002 mS, bore well water conductance is 0.126 + 0.002 mS and conductance of well water is found to be 0.418 + 0.002 mS. Amongst these three samples, well water is comparatively high electrical conductance. The observed values of electrical conductance for others are quite low and less electrolyte.

4. Total Hardness:

Total hardness is defined as the sum of calcium and magnesium hardness in mg/L as $CaCO_3$.Total hardness of water an important factor that indicates toxic effect and poisonous elements [20].

There is no adverse effect of hardness on health. Hard water is also not suitable for domestic and irrigation purposes. Total hardness of Tap water is 44 +1.0 mg/L, bore well water is 72 +1.0 mg/L and the well water is 240 +1.0 mg/L.

The degree of hardness of drinking water has been classified in terms of the equivalent CaCO3 concentration as follows: Soft - 0-60mg/L, Medium - 60-120 mg/L, Hard - 120-180 mg/L, Very hard - >180 mg/L. The observed values were quiet less than the acceptable limit of 300 mg/L.

5. Chlorides:

Chloride is mainly obtained from the dissolution of salts of hydrochloric acid as table salt (NaCl), NaCO2 and added through industrial waste, sewage, sea water etc. Surface water bodies often have low concentration of chlorides as compare to ground water. It has key importance for metabolism activity in human body and other main physiological processes. High chloride concentration damage metallic pipes and structure as well as harms growing plants. According to WHO standards concentration of chloride should not exceed 250 mg/L.

The chloride content of the tap water sample is 14.05 +0.02 mg/L, bore well water is 49.15+0.18 mg/L and Chlorides in well water sample is 29.13 +0.05 mg/L.

6. Acidity:

Acidity of water is its capacity to neutralize a strong base and is mostly due to the presence of strong mineral acids, weak acids and the salt of strong acids and weak bases. Addition of wastewater having acidity producing substances increases the acidity of water. The observed acidity of tap water sample is 81.6+ 0.015 mg/L of $CaCO_3$, bore well water sampleis 96.0+ 0.3 mg/L. of $CaCO_3$. While acidity of well water samples is 106.3+ 0.3 mg/L of $CaCO_3$. The value is much less than threshold value i. e. 200 mg/L of $CaCO_3$. This indicates that sample of water are in safe range.

7. Alkalinity:

Alkalinity is a chemical measurement of water's ability to neutralize acid. Alkalinity is also a measure of water buffering capacity or its ability to resist changes in pH upon the addition of acids or bases. Alkalinity of natural water is due to primarily to the presence of weak acid salts, although strong bases may also contribute (i.e. OH^-) in the extreme environment. Bicarbonate represents the major form of alkalinity in natural water, so its source being the partitioning of CO2 from the atmosphere and the weathering of carbonate minerals in rocks and soil. Other salts of weak acids, such as borate, silicates, ammonia, phosphate, and organic bases from natural organic matter may be present in small amounts.

The observed alkalinity of tap water sample is 30+0.3 mg/L of $CaCO_3$, bore well water sample is 52+0.3 mg/L. of $CaCO_3$ while alkalinity of well water sample is 206+0.3 mg/L of $CaCO_3$. The observed values of alkalinity of tap water and bore well water are within permissible range i. e. below 200 mg/L of $CaCO_3$. The well water is not in safe range i.e. higher than permissible range of 200 mg/L of $CaCO_3$.

8. Dissolved Oxygen:

The amount of oxygen dissolved in water, such as a lake, river or stream. Dissolved oxygen is the most important indicator of the health of water bodies and its capacity to support a balanced aquatic ecosystem of plants and animals. Warm water released from industrial outlets, flowages or storm sewers can also reduce dissolved oxygen levels. Dissolved oxygen may play a large role in the survival of aquatic life in temperature lakes and reservoirs during summer months. Dissolved oxygen of tap water sample collected is 7.126 + 0.015mg/L, bore well water sample is 6.716 + 0.015mg/L, whereas well water sample is 7.436 + 0.015mg/L . It may be due to high temperature and inorganic reluctance such as hydrogen sulfide, ammonia, nitrites, ferrous ions and other oxidizable substances also tend to decrease dissolved oxygen in water.

9. Biochemical Oxygen Demand (BOD):

Biochemical oxygen measures the amount of oxygen that microorganisms consume while decomposing organic matter, it also measures the chemical oxidation of inorganic matter. BOD is a measure of organic material contamination in water, specified in mg/L. BOD is the amount of dissolved oxygen required for the biochemical decomposition of organic compounds and the oxidation of certain inorganic materials (e.g., iron, sulphites).

The observed value of BOD for tap water is 1.081 + 0.03 mg/L, for bore well water is 0.953 + 0.03 mg/L and for well water sample is 1.117 + 0.03 mg/L which is within the permissible range i. e. 0.75-1.5 mg/L.

10. Total Dissolved Solids (TDS):

Total dissolved solids are the total amount of mobile charged ions, including minerals, salts or metal dissolved in a given volume of water in mg/L. TDS is directly related to the purity of water and the quality of water purification system and affects everything that consumes, lives in, or uses water, whether organic or inorganic, whether for better or for worse. Common inorganic salts that can be

found in water include calcium, magnesium, potassium and sodium, which are cations and carbonates, nitrates, bicarbonates, chlorides and sulphates which are anions. They give a particular taste to water at higher concentration and also reduce its palatability.

The total solid present in tap water sample collected is 100 + 1.0 mg/L, for bore well water is 120 + 1.0 mg/L, while that of for well water sample is 215 + 1.0 mg/L which is lower than threshold value of total solid content i.e. 500 mg/L.

11. Calcium hardness:

Calcium is naturally present in water. Calcium is a determinant of water hardness, because it can be found in water as Ca^{2+} ions. As per Indian Standards the calcium content of water should not be more than 75 mg/L. This has been specified in the IS 10500:- Drinking Water –Specifications.

In the study the calcium content in water sample has been found to be for tap water sample is 20 + 0.3 mg/L, for bore well water is 52 + 0.3 mg/L and for well water is 136 + 0.3 mg/L. Tap water and bore well water possess values calcium hardness which is within the limit as per Specification. The observed value for well water shows higher concentration of calcium.

12. Magnesium hardness:

Magnesium is naturally present in water. Magnesium is a determinant of water hardness, because it can be found in water as Mg^{2+} ions. As per ISI the magnesium content of water should not be more than 50 mg/L.

In the study the magnesium content in water sample has been found to be for tap water sample is 24 + 0.3 mg/L, for bore well water is 20 + 0.3 mg/L and for well water is 104 + 0.3 mg/L. Tap water and bore well water possess values magnesium hardness which is within the limit as per Specification. The observed value for well water shows higher concentration of magnesium.

13. Salinity:-

Salinity which is defined as the total concentration of electrically charged ions in the water. These ions are the four major cations-calcium, magnesium, potassium and sodium, and the four common anions carbonates (CO_3), sulphates (SO_4), chlorides (Cl) and bicarbonates (HCO). Other components of salinity are charged nitrogenous compounds such as nitrates (NO_3), ammonium ions (NH_4) and phosphates (PO_4) **[**21]. In general the salinity of surface waters depends on the drainage area, the nature of its rock, precipitation, human activity in the area and its proximity to marine water [22]. Waters with salinity below 1% are fresh and waters with salinity higher than 1% are brackish/marine [23].

The observed value of salinity for tap water sample is 1.172 + 0.003 mg of NaCl, for bore well water sample is 1.162 + 0.003 mg of NaCl and for well water sample is 1.182 + 0.003 mg of NaCl .

CONCLUSION:

The present paper deals with analysis of water quality in different drinking water resources available in Murud Nagarparishad region which was carried out by taking certain important parameters like Temperature, pH, Electrical conductivity, TDS, Alkalinity, Chloride, DO, BOD, Total hardness, Calcium hardness, Magnesium hardness and Salinity. The data of physico-chemical and biological parameters clearly shows that the drinking water of Murud Nagarparishad region is within the permissible range as per APHA (1989), (1992), Trivedi and Goel (1986). Such water is suitable for drinking purpose and can be used for domestic as well as irrigation purpose.

ACKNOWLEDGEMENT:

Authors are thankful to Principal Dr. S. S. Phulari for the encouragement and motivation.

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THE EMOTIONAL BOND BETWEEN INDIA AND BANGLADESH THROUGH LITERARY ENDEAVOUR

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Abstract

South Asia has a rich tradition of art and literature. The neighboring countries i.e. India and Bangladesh share some common concerns, interests and insights. Most important among them is, the countries have a rich tradition of poetry. "Poetry offers an aesthetic experience". The contribution of Indian and Bangladeshi poets in the literary culture brought a revolution. The poets like R Tagore, Kazi Nazrul Islam, Kamala Das, Kaiser Haq to the modern poets Meena Kandasamy, Sonnet Mondal to Taslima Nasreen brought a liberty in thought and action. They are the role models who transformed the role of literature in the mode of resistance in the urge of armed and political struggle. With the music of verse, the wonder of creative imagination, richness of description, marvels of metaphor, and the force of emotion, poetry can educate, motivate, ennoble, and enlighten us. Poetry can also help us appreciate the plenitude, brevity, and beauty of human life. It actually bridges the gap of differences. The present work tries to bring out the essence of literary exchange that binds the neighboring countries together. In addition to qualities of memorability, musicality, imagination, and invention, we find poetry to touch us at an emotional level.

Keywords: *Literature, Poetry, Tradition, Culture, Thought & Action.*

"Art is long; life is short" is a very old saying. Poetic art is considered as a long-lasting art. An American poet said that a poem is "a time machine" made out of words, by means of which people in the past may speak to present and vice versa and even can get connected to future. Poetry is a reflection of a person's innermost thoughts, feelings and desires. The purpose of poetry is to evoke a response or a feeling within someone, but it varies from individual to individual whether they agree or disagree on your analysis of certain subjects. It's a tool which basically influences people because of its emotive and linguistic capture upon its audience. If you are a good poet you can intrigue a person or can persuade anyone to your way of thinking or swaying them into your ideas. This can be a most powerful instrument, the most effective writing skill, to touch and to compel a person with mere word. Thus poetry has the means to influence a society, it is important because it makes us think, it opens us to wonder the astonishing possibilities of language.

Bangladesh and **India** are South Asian neighbors. Relations have been friendly.] They are common members of SAARC, BIMSTEC, IORA and the Commonwealth. The two countries share many cultural ties. We see socio-economic commonalities too. The more liberal newspapers of the area print articles, which underlines the ties which unite the people of the two countries. The articles remind us of our close cultural affinity, our common history, the religions and the languages that we share. What is unnoticed is the process of social change and development which each one of our societies is experiencing today.

Geographically it is easy to define the regions. Historically and culturally they share the same domain. World's major religions exist here. History and geography has placed these two countries together in an environment characterized by homogeneity, intimacy and interdependence.

India seeks to build a new future with Bangladesh. The time has come to chart a new path. The countries have a rich tradition of poetry and share certain common concerns, insights and interests. Poets not only accurately describe and analyze powerful emotions; they also convey or evoke them.

Poetry affects different people in different ways, and can easily do through written words what many conversations fail at – it can heal, inspire, enrage and even spark joy in the darkest of spaces inside you. Poets are blessed to have a special kind of power that allows them to speak to each and every person on an intimate level and keep you hooked and astonished, even if it's a subject you have little-to-no interest in.

Poetry has the power to reach out and touch lives, beyond tangible and intangible borders. The power of good poetry is limitless. Poetry bridges the gap among individuals, rich and poor, present and future and above all across borders. There can be many differences between the countries but poetry overcomes them.

Cohesion means the degree of similarity, here interaction on the basis of social cohesion (whether history, culture, language, ethnicity and common heritage) is the focus. History and geography have placed these two countries together in an environment characterized by homogeneity, intimacy and interdependence. The objective is to promote active collaboration and mutual assistance in the social, cultural, economic and other fields.

There is a class of contemporary Indian poets who have revived a love of poetry in their own unique way. They've given voice to a myriad of subjects, from light to heavy.

Kamala Das (b 1934) as a poet merits as one of the best poets of the twentieth century. "An Introduction" is an autobiographical verse of Kamala Das that throws light on the life of a woman in the patriarchal society. It's a confessional poetry and till today nobody has dared to write anything of such kind.

I was child, and later they
Told me I grew, for I became tall, my limbs
Swelled and one or two places sprouted hair.
When I asked for love, not knowing what else to ask
For, he drew a youth of sixteen into the
Bedroom and closed the door, He did not beat me
But my sad woman-body felt so beaten.
The weight of my breasts and womb crushed me.
I shrank pitifully.

She was child-like or innocent; and she knew she grew up only because according to others her size had grown. Married at the early age of sixteen, her husband confined her to a single room. She was ashamed of her feminity that came before time, and brought her to this predicament. This explains her claim that she was crushed by the weight of her breast and womb.

It's the poet's individuality and feminine identity against social and cultural conformity. The poetry of Kamala Das has been hailed as excellent because of the apparent imaginative daring, stylistic innovation, richness of energy and music. She is a natural poet and has consistently written about herself.

Meena Kandasamy (b.1984) expressed that the "aim of her poetry is to send a social message". As a Dalit woman, she gives a voice to issues such as caste oppression, discrimination and gender relations, her powerful poetry creates waves that are both celebrated as well as questioned by many in our patriarchal society. Kandasamy is political and selective with her words and has stayed true to her identity in carving out space for the voice of resistance and dissent in our tumultuous social and political climate.

There is fierce and exuberant wit and word play in Meena's works. Back-Street Girls is a poem that draws women to the independence enjoyed by men breaking all constraints. Meena's women need not chain themselves by the rules anymore. They can act according to their whims and fancies. They need not confine themselves within the iron bars of culture and tradition.

She has brought in the mythological character, Karaikkal Ammayar who stands for the dalit women who are sexually exploited by men. Karaikal Ammayar was deserted by her merchant-husband to marry "a fresh and formless wife" inspite of her beauty and "the magic of my (her) multiplying love". Her love for Lord Shiva posed her to be a mystic in the eyes of her husband. Meena expresses the pain of deserted women through the mouth of Karaikkal Ammayar. The society viewed her as a mad woman living with faltered step, felted flying hair, hollowed cheeks and bulging eyes.

I am a dead woman walking asylum corridors,
with faltering step, with felted flying hair,
with hollowed cheeks that offset bulging eyes,
with seizures of speech and song, with a single story
between my sobbing pendulous breasts

The poem sarcastically underlines how such women die while they are physically alive.

Tishani Doshi's (b.1975) poetry on the other hand covers a range of themes and subjects, ranging from travel, love and longing to finding and transforming your identity across borders, self-illumination, all tinged with her own experience with the same. Doshi has long reflected on the idea of immigration and creating a new home in new land in "Immigrant's Song"

Instead, let us speak of our lives now —
the gates and bridges and stores.
And when we break bread
in cafes and at kitchen tables
with our new brothers,
let us not burden them with stories
of war or abandonment.
Let us not name our old friends
who are unravelling like fairytales
in the forests of the dead.
Naming them will not bring them back.
Let us stay here, and wait for the future
to arrive, for grandchildren to speak
in forked tongues about the country
we once came from.

Tishani Doshi says she worries about the "culture of fear" that has developed toward immigrants in the United States and Britain. "You think you live in one kind of community and then… you realize that there are huge rifts in society that come out of fear— fear that has been artificially created and manipulated." She blames politicians for playing to very base emotions, scaring people that immigrants will take their jobs or incite violence. "That kind of talk is very misleading and very dangerous."

In the last more than four decades, the two countries have continued to consolidate their relations and have built a comprehensive institutional framework to promote bilateral cooperation in all areas. More than 50 bilateral institutional mechanisms are operational at present between India and Bangladesh.

Bangladesh is highly prone to natural disasters like floods, cyclones and has history moved by powerful emotion of nationalism, independent identity. Asad Chowdhury (b. 1943) poet, writer, translator, radio personality and journalist and cultural activist from Bangladesh in his ironic poem 'Rights of the Tiger' has said:

……. "Sir, your tiger rights are being violated all
around. We have been fighting to establish human rights.
If you permit, we can try the same for all the tigers of Asia,
Africa and Latin America.
Hearing this the tiger howled with laughter just like
a scary villain of the tinsel world.
"Didn't you once write a poem to heal all the unwell green of
this earth? "
I had to agree, nodding my head sheepishly.
"Please leave tiger rights alone for some time
and try curing yourselves for a change.

Man and earth are seriously ill, in case you noticed."
He seemed really disturbed at it all,
and that's how I got rid of worries about tiger rights.
(Translated by Afsan Chowdhury)

In the above poem man approaches the Tiger in order to start a movement for the rights of the Third World Tigers. But the Tiger ask him to leave the Tiger – Rights alone for some time and to try curing himself for a change as Man and his Earth are alike seriously ill.

The liberation war in 1971, where three million people gave their lives for the country, was the most significant period for Bangla literature. The new literature with new voices from a newly emerged country flourished only from then on. New Bangla poetry is moving forward along with its traditionalism and modernism although many have practiced post modernism styles.

Rumana Siddique's *Five Faces of Eve: Poems* (2007) reflects the timeless experience of a woman symbolized by their biblical ancestor, Eve. Rumana's poems are a mix of the pleasures and pains of life. The poems in this collection have been written over a span of twenty-five years and mark the rites of passage from girlhood to womanhood. Inspired by the joys and pains of roles that women play, each bringing with it a new face to wear, the volume is a reflection of the timeless experience of womanhood symbolised by a common ancestor "Eve." The poems are wry, ironic, rueful, sometimes sad and sometimes playful.

Kaiser Haq (b.1950) is the most leading English language poet in Bangladesh. His poetic output is quite substantial. A freedom fighter himself, Kaiser Haq is a consummate artist who has painted the contemporary Bangladeshi scene with powerful imaginative mind and artistic precision. His work bears all the hallmarks of good poetry. In "Senior Citizen," Haq introduces the way people are mocking aged persons. There is mild sarcasm in their tone and pitch. The people's tone makes double connotation of the spoken words with its meaning.

I'm Sixty.
Facetious fools say that's nothing
If one's young at heart,
Or, absurdly: Sixty's the new forty.

An aged person who worked so hard by using his or her intelligence, ideas, genius and now at the evening hour of his or her life, forcing them to engage in their socially constructed reality. They are granted as useful element still they are fulfilling their role. Then, when they have nothing more to give to the society they were tossed aside.

The events of 1971 inspired Bengali poets to write about the horrors of the war as they did about the heroism of the people. Shamsur Rahman (b.1929-d.2006) a poet, journalist and columnist wrote about the destruction of landmarks and of inhuman massacres.

Rahman, who emerged in the latter half of the 20th century, wrote more than sixty books of poetry and is considered a key figure in Bengali literature. He was regarded as the *unofficial poet laureate* of Bangladesh. Major themes in his poetry and writings include liberal humanism, human relations, romanticised rebellion of youth, the emergence of and consequent events in Bangladesh, and opposition to religious fundamentalism

From the short lyric to the dramatic monologue, from strictly rhymed verses to flexible mixed forms, he has handled all modes with effortless mastery. He is equally interesting in his treatment of topical and historical subjects and the timeless themes of poetry – political turmoil, war, political leaders; the many faces of love, the exploration of the self, the passage of time; mortality.

For A Few Lines of Poetry
I go to a tree and say:
Dear tree, can you give me a poem?
The tree says: If you can pierce

My bark and merge into my marrow,
Perhaps you will get a poem.
I whisper into the ears
Of a decaying wall:
Can you give me a poem? ……
[Translated from the Bengali by Syed Najmuddin Hashim]

Through the above quoted poetries we can conclude that poetry has something to do with morality and religion on one hand on the other with politics and society and above all with the emotions of the poet or his/her perspective of life.

"There may be various misunderstanding between India and Bangladesh, but if there is a people-to-people contact amongst us, it strengthens the fraternity between us. It also helps in the development of non-fundamental thoughts and both nations will get inspired for socio-economic development," said by Member of Parliament Ziaul Haque Mridha in 2015. Thus creativity, and sheer human strength, verses sprung forth in both the countries. All visual and performing arts, crafts and culture are means to unite people. These inspired poems are as diverse as the individuals and communities that this bridge links together. There can never be wars between wise people. Thus *poetry bridges the gap between* high and popular culture and reaches a broader audience. Literary Festivals and programmes help in strengthening the bonds between the countries and will pave the way for socio-economic development and many more. Thus:

And forever and forever,
As long as the river flows,
As long as the heart has passions,
As long as life has woes;
The moon and its broken reflection
And its shadows shall appear,
As the symbol of love in heaven,
And its wavering image here.
Henry Wadsworth Longfellow.

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SYNTHESIS AND CHARACTERIZATIONS OF ZINC COBALT FERRITE ($Zn_{0.5}Co_{0.5}Fe_2O_4$) NANOPARTICLE USING GREEN AND ORGANIC CHELATING AGENTS VIA SOL-GEL AUTO COMBUSTION TECHNIQUE: - IT'S COMPARATIVE STUDY

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Abstract
The nano size particle of Zinc Cobalt ferrite having the chemical formula $Zn_{0.5}Co_{0.5}Fe_2O_4$ was synthesized by a Sol-Gel auto combustion route using green and organic chelating agents. The obtained material was sintered at 700 °C for 8 hours. The sintered nanoparticles were characterized by means of Fourier transform infrared spectroscopy (FT-IR), X-ray diffraction analysis (XRD), scanning electron microscopy (SEM) and energy dispersion X-ray analysis (EDAX). FT-IR study was performed to ascertain the structure of the nanoparticles. XRD analysis revealed a single crystalline cubic phase for nanoparticles thermally treated at 700 ºC. The average crystallite size was found to be around ***15.6 nm and 15.9 nm****. Scanning Electron Microscopic (SEM) studies revealed nano crystalline nature of the sample. Energy dispersion X-ray analysis (EDAX) was performed to know an elemental composition of the sample and to confirm the stoichiometry.*
Keywords: *$Zn_{0.5}Co_{0.5}Fe_2O_4$, Sol-Gel auto combustion; X-Ray Diffraction; SEM; EDAX*

1. INTRODUCTION:

Spinel ferrite nanoparticles and their coated, specially Co-Zn ferrite have been extensively investigated during the recent years, due to their favorable magnetic properties in all areas of biomedicine and bioengineering, such as contrast enhanced magnetic resonance imaging, cell separation, hyperthermia, detoxification of biological fluids, drug delivery and tissue regeneration[1-6]. Synthesis of magnetic nanoparticle has been desperately interested because of their unique features and potential applications, such as magnetic resonance imaging, treatment of cancer and biomedical drug delivery [1,2, 7-10].

Cobalt ferrite ($CoFe_2O_4$) is a well-known hard magnetic material with high coercivity and moderate magnetization. These properties, along with their great physical and chemical stability, make $CoFe_2O_4$ nanoparticles suitable for magnetic recording applications [11]. Many efforts have been made to improve the basic properties of these ferrites by substituting or adding various cations of different valence states depending on the applications of interest. Among spinel ferrites, Zn^{2+} substituted $CoFe_2O_4$ nanoparticles exhibit improved properties such as excellent chemical stability, high corrosion resistivity, magnetocrystalline anisotropy, magnetostriction, and magneto-optical properties [12-13].

In addition, metallic nanoparticles are made of iron, nickel or cobalt, mostly due to their chemical instability for biological applications are ignored and are easily oxidized in the presence of water and oxygen [14]. Cobalt zinc ferrite nanoparticles have been synthesized by different methods, such as co-precipitation, hydrothermal, sol-gel and other chemical methods [15-17].

In this paper, focus was placed on the comparative study of size controlled synthesis and characterizations of zinc cobalt ferrite ($Zn_{0.5}Co_{0.5}Fe_2O_4$) nanoparticle using green chelating agent such as lemon juice and conventional chelating agent such as citric acid via Sol-Gel auto combustion method. Their characterization was investigated by X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR), and scanning electron microscopy (SEM) with EDAX.

2. EXPERIMENTAL

2.1. Materials

All the chemicals used in this study are commercial samples and belong to analytical grade. They were used as received without further purification. Iron nitrate nonahydrate$Fe(NO_3)_3.9H_2O$, Zinc nitrate hexahydrate $Zn(NO_3)_2.6H_2O$, Cobalt nitrate hexahydrate $Co(NO_3)_2.6H_2O$, were used as a precursors and lemon and citric acid as a binding agent.

2.2. Synthesis of Zn-Co-ferrite nanoparticle

In the preparation of Zn-Co-ferrite nanoparticles were synthesized by sol-gel auto combustion method, using starting material of high purity AR grade metal nitrate and lemon juice and citric acid. The metal nitrate solutions were mixed in the required stoichiometric ratios in minimum quantity of distilled water. The solutions will be mixed on a magnetic stirrer at 353K. In order to maintain alkaline condition, ammonia solution was added to the reaction mixture (pH 9 - 9.5). The solution mixture was slowly heated around 373K with constant stirring to obtain a fluppy mass. On further heating, colored powder will obtained. The powder will cooled for some time. The obtained powder nanoparticles were annealed at temperature of 973Kfor 8 hours.

2.3. Size characterization of Zn-Co-ferrite nanoparticle

The ferrite nanoparticles prepared was analyzed by X-ray diffraction technique (XRD) for structure and crystallinity. The formation of mixed metal ferrite nanoparticles was confirmed by Fourier transform infrared (FT-IR) studies. X-ray diffraction (XRD) data was collected at room temperature. Crystallographic properties e.g. phase of the material and crystal structure was determined using the same data.

FT-IR analysis was carried out in the range of **4000-400** cm^{-1}. The samples were pelleted with KBr.

SEM-EDAX analysis was also performed to assure the prepared nanomaterials.

3. RESULT & DISCUSSION

3.1. FTIR ANALYSIS

- ✓ In the FT-IR spectra the frequency bands near 564-588 cm -1 and 425-442 cm-1 are assigned to the tetrahedral and octahedral clusters and confirms the presence of M-O stretching band in ferrites.
- ✓ The authors suggested that the vibrational mode of tetrahedral clusters is higher as compared to that of octahedral clusters, which is attributed to the shorter bond length of tetrahedral clusters.
- ✓ So, FT-IR not only used to collect information about the structure of a compound, but it is also utilized as an analytical tool for assessing the purity of a compound.
- ✓ Fig. 1 & Fig. 2 exhibits the FTIR absorption bands for spinnel ferrites at room temperature in the wave number range of 400–4000 cm^{-1}.
- ✓ It is obvious that the higher frequency band is around 550 cm^{-1} and the lower frequency band is around 400cm^{-1} shown in fig (1 & 2).
- ✓ The highest one corresponds to the intrinsic stretching vibrations of the metal at the tetrahedral site, whereas the lowest band is assigned to octahedral-metal stretching.

Fig. 1. FTIR spectra of $Zn_{0.5}Co_{0.5}Fe_2O_4$ synthesized by using lemon sintered at 800^0C

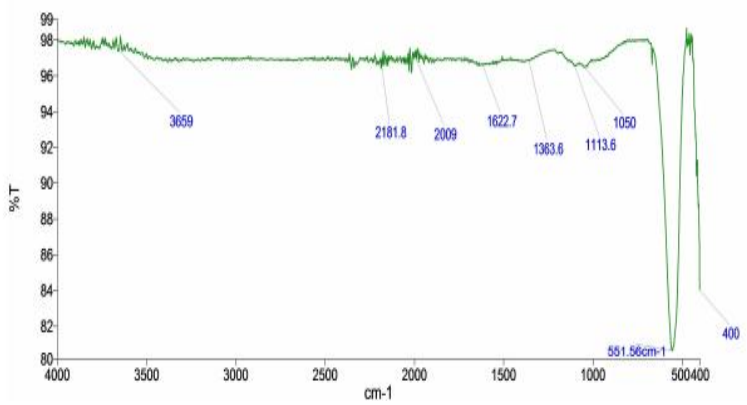
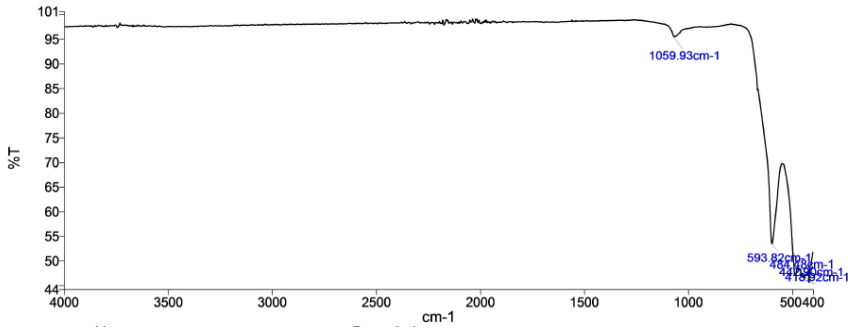


Fig. 2.FTIR spectra of $Zn_{0.5}Co_{0.5}Fe_2O_4$ synthesized by using citric acid sintered at 800^0C



3.2. XRD ANALYSIS

- Fig.(3 & 4) shows the XRD patterns of the MOD synthesized **$Zn_{0.5}Co_{0.5}Fe_2O_4$** powder sintered at 800^0C for 8 hrs. XRD peaks are indexed with the JCPDS Cards (# 22-1086 for $CoFe_2O_4$ and # 89-1012 for $ZnFe_2O_4$).
- The patterns show characteristic diffraction lines (220), (311), (222), (400), (422) and (511) of spinel cubic structure. The extra reflection peaks of Fe_2O_3 are also observed in XRD patterns of doped samples.
- The observation is not unusual particularly at a low sintering temperature.

Fig. 3. XRD spectra of $Zn_{0.5}Co_{0.5}Fe_2O_4$ synthesized by using lemon sintered at 800^0C

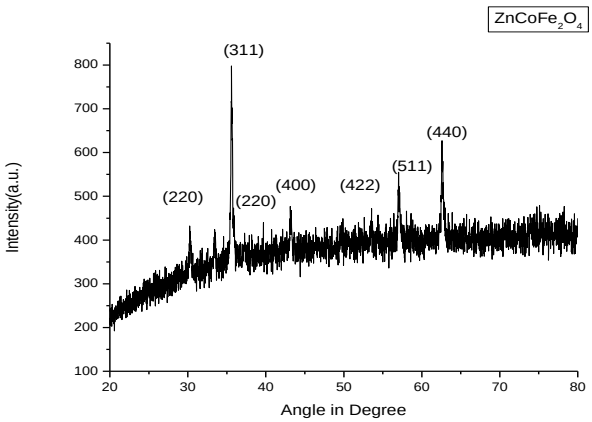
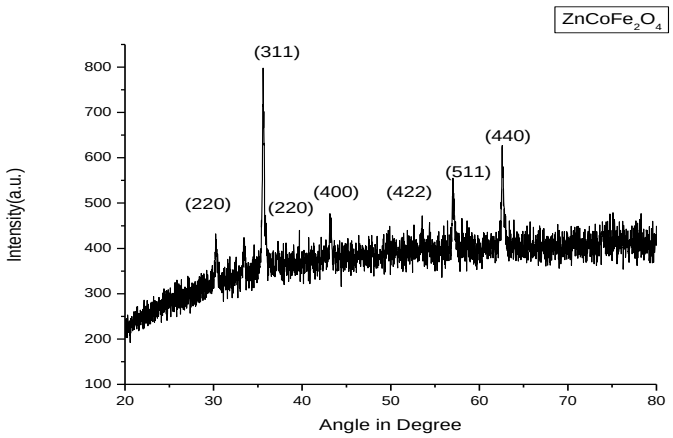


Fig. 4. XRD spectra of $Zn_{0.5}Co_{0.5}Fe_2O_4$ synthesized by using citric acid sintered at 800^0C



3.3. PARTICLE SIZE CALCULATION OF $Zn_{0.5}Co_{0.5}Fe_2O_4$ NANOPARTICLES BY SCHERER FORMULA:

The sizes of the nanoparticles at different annealing temperatures have been determined using Scherer equation from the Full width at Half Maximum (FWHM) value of [311] diffraction peak.

$D = 0.9\lambda/\beta \cos\theta$

Where D is the particle size, λ is the X-ray wavelength (1.5418), θ is the Bragg angel and β is the half maximum width.

The size of nanoparticles samples synthesized by green and organic chelating agent was obtained as 15.7 nm and 15. 9 nm respectively at 973K annealing temperature for 8 hour.

3.4 SEM ANALYSIS

- ✓ The scanning electron microscope (SEM) images of Co-Zn ferrites sintered at 800^0C is shown in Fig.5 & 6.
- ✓ In Fig.5 & 6, it can be seen that particles are well distributed and agglomerated.
- ✓ Usually, these agglomerates are formed by smaller size particles.
- ✓ The size of the grain is 142nm from Fig.5 & 6.
- ✓ SEM image reveal dense microstructures.

Fig. 5. SEM micrograph of $Zn_{0.5}Co_{0.5}Fe_2O_4$ synthesized by using lemon sintered at 800^0C

Fig. 6. SEM micrograph of $Zn_{0.5}Co_{0.5}Fe_2O_4$ synthesized by using citric acid sintered at 800^0C

3.5 Energy dispersive x-ray spectroscopy (EDAX)

- ✓ Energy dispersive x-ray spectroscopy (EDX) spectra of **$Zn_{0.5}Co_{0.5}Fe_2O_4$** sample sintered at 800^0C are shown in Fig. 7 & 8.
- ✓ The presence of Co, Zn and Fe in the samples is depicted in the spectra.
- ✓ The EDX analysis indicates the wt% of cobalt and zinc in these samples.

Fig. 7. EDAX spectra of $Zn_{0.5}Co_{0.5}Fe_2O_4$ synthesized by using lemon sintered at 800^0C

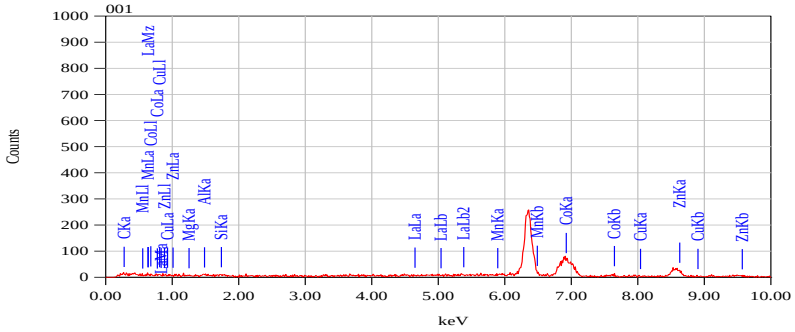
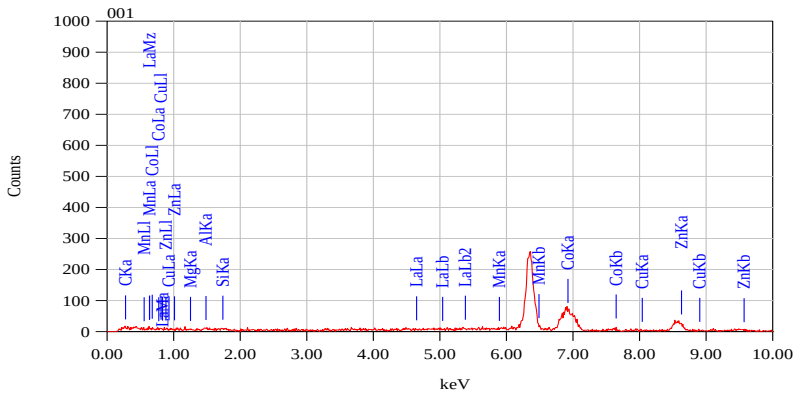


Fig. 8. EDAX spectra of $Zn_{0.5}Co_{0.5}Fe_2O_4$ synthesized by using citric acid sintered at 800^0C



4. CONCLUSIONS

- ✓ The system $Zn_{0.5}Co_{0.5}Fe_2O_4$ system have been successfully synthesized by Sol-gel auto combustion method using lemon juice as a chelating agent at controlled pH and exhibits the single phase cubic spinel structure.
- ✓ FT-IR spectra explain tetrahedral and octahedral clusters and also confirm the presence of M-O stretching band in $Zn_{0.5}Co_{0.5}Fe_2O_4$ nanomaterial.
- ✓ X-ray diffraction pattern confirms the formation of cubic spinel structure in single phase without any impurity peak. It is in good agreement with the standard data from ICSD.
- ✓ The crystallite size of $Zn_{0.5}Co_{0.5}Fe_2O_4$ system synthesized by green and organic chelating agent was obtained as 15.7 nm and 15. 9 nm respectively.
- ✓ SEM image of prepared sample show that the particles have an almost homogeneous distribution, and an agglomeration of nanoparticles with inhomogeneous broader grain size distribution.
- ✓ EDAX data give the elemental % and atomic % in the mixed $Zn_{0.5}Co_{0.5}Fe_2O_4$ system and it shows the presence of Zn, Co,Fe and O without precipitating cations.

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WORK CULTURE AND EMPLOYEE SATISFACTION

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Abstract

Work culture has recently emerged as one of the key areas of research in organizational behaviour. The type of work culture that exists in within the industry influences the employee. The impact of work culture on productivity, profits and organizational effectiveness has, in recent years, drawn the attention of top management. Employee satisfaction is an employee's sense of achievement and success on the job. Employee satisfaction implies doing a job one enjoys, doing it well and being rewarded for one's efforts. Employee satisfaction is an important component in organizational health and industrial relations too. It also effects on various aspects of work behaviour such as accidents, absenteeism, turnover and productivity. The organization has to depend upon its work culture to attain its objectives. Workers satisfaction plays an important role in developing the synergic and strong work culture among the workers. Hence, productivity, efficiency and prosperity are the outcome of the work culture and employee satisfaction.

Keywords*: Work Culture, Employee Satisfaction, Productivity.*

INTRODUCTION

Work culture has recently emerged as one of the key areas of research in organizational behaviour. The type of work culture that exists in within the industry influences the employee. Organizational work culture has potential influence on production, satisfaction, absenteeism, motivation, turnover and overall prosperity of the business. The impact of work culture on productivity, profits and organizational effectiveness has, in recent years, drawn the attention of top management.

Employee satisfaction is an employee's sense of achievement and success on the job. It is generally perceived to be directly linked to productivity as well as to personal wellbeing. Employee satisfaction implies doing a job one enjoys, doing it well and being rewarded for one's efforts. It further implies enthusiasm and happiness with one's work. Employee satisfaction is the key ingredient that leads to recognition, income, promotion, and the achievement of other goals that lead to a feeling of fulfillment.

A satisfied, happy and hardworking employee is the biggest asset for any organization. Workforce of any industry is responsible to a large extent for its productivity and profitability. Efficient human resource management and maintaining higher job satisfaction level in industries determine not only the performance of the organization but also affect the growth and performance of the entire economy.

Employee satisfaction is an important component in organizational health and industrial relations too. It also effects on various aspects of work behaviour such as accidents, absenteeism, turnover and productivity. Several studies have focused on these factors of work behaviour.

STATEMENT OF THE PROBLEM

Roha is one of the Taluka place in the Raigad district. In 1973, the State Government has established Maharashtra Industrial Development Corporation in Dhatav-Roha. Many small and medium scale industries have started industrial units and running successfully over the last forty years. The total number of workers in this industrial area is near about 3000. Work culture plays a very important role in productivity, industrial peace, work behaviour, accidents, and employee satisfaction. Therefore, I have undertaken to study the correlation between work culture and employee satisfaction among workers in selected industries in Roha industrial. Area. Hence, the present study examines the correlation between work culture and employee satisfaction of industrial workers in Roha industrial area.

OBJECTIVES OF THE STUDY

This study is undertaken specially with the following objectives.

a) To study the various dimensions of work culture.

b) To study the various variables of employee Satisfaction.

c) To study correlation between work culture and employee satisfaction.

LITERATURE REVIEW

Culture is a continuous process it comes from past, adjust itself with present and prepares for future. Culture is the integrated system of learned behaviour patterns.

Shared beliefs, values norms and tradition are characteristics of the members of a particular group. It is a collective mental programming of the people in an environment and it is purely social, without even slightest element of biological inheritance. Culture consists of complex patterns explicit and implicit of and for learnt and shared behaviour acquired and transmitted by symbols.

"Sinha (1990) defines "work culture as the totality of the various levels of interacting forces around the focal concern of work". Work culture means work related activities in the framework of norms and values regarding work.

Work Culture in this context would include: -

- Work related activities
- The cognitions, the affect and the values attached to them
- The normative structure within
- A setting

Work culture has been defined by *Walton (1979)* as 'the combination of attitudes, relationships, developed capabilities, habits and other behavioral patterns that characterize by dynamics of the organization'.

Peters and Waterman (1982) had stamped the casual association between culture and performance. They agreed that superior firm performance is possible only when a company moves from a pure technical and rationalist approach towards a more adaptive and humanistic approach.

The germs of the employee satisfaction found in the early 1900 with the different study on job satisfaction. These perspectives are the characteristics of the job and the job environment. The Hawthorne studies (1924-1933) by Elton Mayo of the Harvard Business School, was the biggest preludes in the job satisfaction study. The work of Scientific Management by Frederick Winslow Taylor published in book; "Principles of Scientific Management" in 1911 also had a significant impact on the study of job satisfaction. Maslow's hierarchy of needs theory called as a 'motivation theory' laid a foundation for the job satisfaction theory.

Kayis short listed 11 dimensions which are used to measure employee satisfaction and they are: (1) social cohesiveness (2) pay levels (3) job security (4) decision making (5) promotion opportunities (6) training and development (7) teamwork and cooperation (8)autonomy (9) external customers (10) overall job satisfaction (11) overall satisfaction with the current organization.

METHODOLOGY ADOPTED

In order to identify the items of work culture in industries, exhaustive literature survey was done. On the basis of literature survey and pre testing of the questionnaire, total 22 items were chosen for the study. These items were made statements in the questionnaire. The workers of the twenty industries in Roha industrial estate were asked to rate these statements on a six point Likert scale ranging from 1 to 6. According to that scale 6 being very much satisfied, 5 Much satisfied, 4 Somewhat satisfied, 3 Somewhat dissatisfied, 2 Much dissatisfied and 1 Very much dissatisfied.

Secondly, the questionnaire was administered to the respondents. The tool was meant to measure the employee satisfaction. On the basis of literature and the pre-testing of the questionnaire, total 26 items were chosen to capture the satisfaction level of workers. The respondents were asked to rate these factors on a 5 point Likert scale ranging from 1 to 5; 1 Not available, 2 being Quite Unsatisfied, 3 Unsatisfied, 4 Moderately Satisfied, and 5 Quite Satisfied.

These factor includes:- S1- Salary and Perks; S2- Opportunities for career development; S3- Housing facilities; S4- Housing facilities S5- Working Hours; S6- Leave conditions; S7- Training Facilities; S8- Transfer; S9- Increments; S10- Discipline at work place; S11- Health facilities; S12- Other welfare facilities; S13- Leave Travel Concession; S14-- Freedom to take decisions; S15-; Special

facilities for women employees; S16- Shift Duties; S17- Performance Appraisal; S18- Reward for sincere and honesty; S19- Rest rooms and lavatories; S20- Canteen Facilities S21- Information & communication system; S22- Sports facilities; S23- Safety measures at the work place; S24- Entertainment facilities; S25-Cultural Activities; S26- Counseling and Coaching

The questionnaire was personally given to 404 workers in different twenty industrial units from Roha industrial area and their responses are collected. On basis of factor analysis, the dimensions of work culture and employee satisfaction are derived.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.904
Bartlett's Test of Sphericity	Approx. Chi-Square	2632.641
	Df	231
	Sig.	.000

The above table shows the Sampling Adequacy is .904 and it is significant as the value is .000.

Cronbach's alpha was calculated to measure the internal consistency and reliability of the both instrument. The Cronbach alpha of work culture instrument came as 0.894 and employee satisfaction 0.883 as shown in the following Table, thus the instruments was considered reliable for the study.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
1) .894 2) .883	.894 .883	22 26

STATISTICAL TOOLS FOR ANALYSIS

The factor analysis was done to extract and club the items as the inter-related items of work culture are in large number. The method used for the factor analysis is Principal component Analysis and Varimax with Kaiser Normalization Rotation method. Correlation between the dimensions of work culture and employee satisfaction is calculated.

RESULTS AND DISCUSSIONS

After getting the factors of work culture and employee satisfaction, the next step is computing the correlations between work culture dimensions and the dimensions of employee satisfaction. It is shown below in the following Table followed by discussion.

Correlations between Work Culture and Employee Satisfaction Dimensions

Dimensions of Employee Satisfaction → / Dimensions of Work Culture ↓	Participative Environment	Hygiene Factor	Fair Empathic Managnt.	Feel Good Factors	Trust	Efficient Environment
Commitment to Work	.103*	-.020	.071	.024	.240**	.042
Job Affect	.175**	.083*	.158**	.085*	.751**	.080
Hard Work	.014	.027	.093*	.043	.145**	.061
Job Clarity	.312**	.197**	.382**	.297**	.734**	.313**
Job and Life Satisfaction	.302**	.177**	.338**	.234**	.788**	.276**

*Correlations are significant at 0.05 levels (1-tailed)

**Correlations are significant at 0.01 levels (1-tailed)

1. Participative Environment

The correlations of dimensions of Work Culture are all positive and significant ($P \leq 0.05$). The correlation between Commitment to work and Participative Environment is ($r = .103$, $P \leq .05$) significant and positive. The workers of the industries are committed for the extra work also because of the participative environment. They have a commitment to work because of the nature of job, the level of motivation they obtained from the superiors and management and the career opportunities offered by their job. These are the factors resulted from factor analysis in the dimension of commitment to work and they are significant.

The correlation of another dimension of work culture Job Affect is ($r = .175$, $P \leq .01$) also positive and significant. The job affect or job involvement is mostly concerned with the participation of workers they are given by the management in the important decision making or the manner of used for solving the conflicts and the scope of the job provided for achieving their aspirations and ambitions. When the workers get participation by different ways increases their involvement automatically in the organization.

Similarly, the Job Clarity also has a positive correlation with Participative Environment ($r = .312$, $P \leq .01$). The way of information flows around in the organization and the goals are identified by the workers clearly encourage them for the participative environment. The workers always expect the transparency in the information flow from the management and superiors. If the information is received to them authentically that helps for the participative environment. The goals of the organization reflect through the actions and participation of workers in the activities. This factor has emerged as a significant aspect of the work culture and it is significantly correlated with the participative environment.

Finally, Job and Life Satisfaction also positively correlates ($r = .302$, $P \leq .01$) with Participative Environment. The workers are satisfied with their relationships with other people at work and the level of salary relative to their experience. The factor of salary has a highest factor value i.e. .716 which suggests that the workers are happy with their salary and relationship with their co-workers and superiors. Job and life satisfaction showed a positive correlation for creating the participative environment.

2. Hygiene Factors

It can be observed from the Table 4.32 that all the independent variables have a positive and significant correlation ($P \leq .01$) with Hygiene Factors except the Commitment to Work, Superior-Subordinate Relationship and Work Pressure.

The Job Involvement have a positive and significant correlation ($r = .083$, $P \leq .05$) with Hygiene Factors. Health facilities, Rest Rooms and Lavatories and Sports facilities are adequately available which contribute to the job involvement in the organization. Similarly, Job Clarity also indicates significant correlation ($r = 0.197$, $P \leq .01$) with hygiene factors. Because of the adequate hygiene factors the workers are motivated and maintain a good relationship with co-workers and superiors. The job and life satisfaction also have a significant correlation ($r = 0.177$, $P \leq .01$) with hygiene factors. The Up-to-date technology shows a significant correlation ($r= 0.156$, $P \leq 0.01$) with hygiene factors. Because of the positive hygiene factors the workers have positive response to the up-to-date technology. Similarly, the Reinforcements also indicates significant correlation ($r = .212$, $P \leq .01$) with hygiene factors. The expectations of hard work and sincerity from workers are fulfilled due to satisfied hygiene factors.

3. Fair and Empathic Management

An analysis of correlation reveals that all the independent variables have a significant correlation ($P \leq .01$) with Fair and Empathic Management except, Work Pressure only.

Job Affect have a positive and significant correlation ($r = .158$, $P \leq .01$) with Fair and Empathic Management. Harmonious relationship with other people at work, highly motivated employees and

freedom and flexibility given by an organization always results into Fair and empathic management. There is significant relationship between Hard Work (r = .093, P ≤ .05) and Fair and Empathic Management. The hard work culture of the employees creates Fair and empathic Management.

It is revealed from the correlation between Job Clarity (r = .382, P ≤ .01) and Fair and Empathic Management that they have significant relationship. It seems that the workers having clear understanding of goals, adequate information regarding organization and which kind of task they have to perform must turns the management into empathic mood towards workers. The work culture providing scope for participation in the important decision and achieving aspirations and ambitions to the workers always results into friendly management environment.

Job and Life Satisfaction also have a significant correlation (r = .338, P ≤ .o1) with Fair and Empathic Management. Satisfied workers in job content and opportunities available for their career always cooperate with management. Satisfied workers promote empathic work culture.

4. Feel Good Factors

The correlation between Job Affect and Feel good factor is significant at .05 level (r = .085, P ≤ .05). It shows that the job involvement of the workers through good relationship and adequate motivation or flexibility and freedom makes the workers feel good. Similarly, Job Clarity also have positive and significant correlation (r = .297, P ≤ .01) with Feel Good Factors. The clear understanding of goals, information, changes or innovations, nature of work to be performed, participation in important decisions of the organization makes the employees feel good and participative.

As per the analysis, the correlation between Job and Life Satisfaction (r = .234, P ≤ .01) and Feel good Factor is positive and significant. It clearly shows that job satisfaction and the factors contributing the life satisfaction makes the workers happy and feel good atmosphere.

An analysis shows that the Commitment to Work have a significant correlation (r = .240, P ≤ .01) with Trust. The workers have a positive attitude culture and their devoted nature in their job creates a Trust between workers and Management. Similarly, Job Affect also have positive significant correlation (r = .751, P ≤ .01) with an item of Trust. Job Affect or involvement created by relationship, motivation, and job security has created a trust in the minds of workers. Thirdly, the correlation between Hard work and Trust is also significant at .01 level (r = .145, P ≤ .01) .Hard work nature of the workers and giving importance to the job first created a synergetic work culture resulted into Trust. The correlation of Job clarity and Trust is positive and significant (r = .734, P ≤ .01). The job clarity through goals, information, innovations, kind of task, etc. makes management trustworthy towards workers. The variable of Job and Life Satisfaction also shows significant correlation (r = .788, P ≤ .01) with the independent variable of Trust. This is the highest correlation among all the variables and therefore it seems that the workers have a job and life satisfaction at the maximum level so it resulted into trust with management.

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CONCLUDING REMARKS

Work culture can have potential effects on employee motivation and behaviour, so it has long been effect on outcomes such as productivity, performance, commitment, self-confidence and ethical behaviour. The correlations of dimensions of Work Culture with dimension of employee's satisfaction i.e. Participative Environment, Hygiene factors, Fair and Empathic Management, Feel good factors, Trust and Efficient Environment are all positive and significant (P ≤ 0.05) and all the Organizational Climate Factors also shows positive and significant.

At the end, on the basis of above analysis, it can be concluded that workers satisfaction factors plays an important role in developing the synergic and strong work culture among the workers.

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TO STUDY THE PRE-TREATMENT OF COOLING ON SEED GERMINATION IN CICER ARIENTINUM

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Abstract
To study seed germination in Cicer arientinum under chilling pre-treatment at various time duration. The germination of seeds per day, percentage of seed germination, Formation of plumule, average shoot length, average radical length in cm are parameters under study. The germination of seeds of Cicer arientinum is more in 80 min chilled seeds than control and other treated seeds.The seed germination percentage is more in the seeds which are chilled for 80 min than control seeds and the seeds which are chilled for 20 min, 40 min and 60 min . The number of seeds showing plumule in Cicer arientium are affected due to cooled pre-treatment. . The seeds of Cicer arientium which are chilled for 60 min shows minimum average shoot length. Maximum average length of radical is seen in control as well as the seeds which are chilled for 20 min.

Introduction:-

The chickpea or chick pea (Cicer arietinum) is a legume of the family Fabaceae, subfamily Faboideae. Its different types are variously known as gram. According to UN Food and Agriculture Organization, Corporate Statistical Database *(FAOSTAT)*, in 2016, India produced 64% of the world total of chickpeas.

In 1793, ground-roast chickpeas were noted by a German writer as a substitute for coffee in Europe. In the First World War, they were grown for this use in some areas of Germany. They are still sometimes brewed instead of coffee.

A collaboration of 20 research organizations, led by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) identified more than 28,000 genes and several million genetic markers. Scientists expect this work will lead to the development of superior cultivars, among which 77 have already been released to farmers around the world.

Hummus is the Arabic word for chickpeas. According to Marks, Gil (2010) by 2010, 5% of Americans consumed hummus on a regular basis. It was present in 17% of American households is studied by *Ferretti, Elena (April 5, 2010).*

Chickpeas are a nutrient-dense food, providing rich content (20% or higher of the Daily Value, DV) of protein, dietary fibre, folate, and certain dietary minerals such as iron and phosphorus. This was learned by *El-Adawy, T.A. (2002).*

Germination of chickpeas improves protein digestibility, although at a lower level than cooking. Germination degrades proteins to simple peptides, so improves crude protein, non protein nitrogen, and crude fiber content studied by *El-Adawy, T.A. (2002).*

Sheila, J.; Sharma, N. (1996). Learned that most widely distributed pathogens are *Ascochyta rabiei* (35 countries), *Fusarium oxysporum* f.sp. *ciceris* (32 countries) *Uromyces ciceris-arietini* (25 countries), bean leafroll virus (23 countries), and *Macrophomina phaseolina* (21 countries). *Ascochyta* disease emergence is favored by wet weather; spores are carried to new plants by wind and water splash.

Materials and Methods:- Cicer arientinum seeds are collected and placed 10 each in set of petridish. Each petridish is placed with normal blotting paper at bottom. First petridish is treated as control.

5 sets of petridishes are taken for the study of seed germination. Each petridish contains 10 seeds of Cicer arientinum. Here we are taking 2 replicas of 5 sets of petridishes with 10 seeds of Cicer arientinum. The observations of both experiments are considered as average. The germination of seed is treated as one of the important criteria to study the impact of cooling treatment on Cicer arientinum.

Among the 5 petridishes 1st petridish kept common for control reference. Another 4 petridishes are kept in refrigerator at 0^0 C. From the zero time to 20 min 2nd petridish is removed from the refrigerator. After 40 min, 60 min, 80 min from zero time the 3rd, 4th and 5th petridishes are removed from the refrigerator respectively.

The control and the chilled pre-treated petridishes with 10 each Cicer arientinum seeds were under 10 days observation. It was study to seed germination of Cicer arientinum under cooling treatment at various time durations.

The treated petridishes (2nd, 3rd, 4th and 5th) with 10 seeds of Cicer arientinum are cooled as pre-treatment at the time duration of 20 min between each petridish. These cooled petridishes and the control petridishes then kept for seed germination for 10 days. To study the seed germination of Cicer arientinum we will observe the number of seed germinated per day, germination percentage of seeds, number of seeds showing plumule, average shoot length, average radical length within 10 days are the parameters considered to study.

The entire process is repeated for 10 days. The observations are taken as an average of both replicas.

Result and discussion:-

Table 1:- Effect of Cold pre-treatment at various duration on number of germination in Cicer arientinum.

Cooling Treatment	Number of seed germination/day									
	Day One	Day Two	Day Three	Day Four	Day Five	Day Six	Day Seven	Day Eight	Day Nine	Day Ten
Control	0	3	5	6	7	8	9	9	9	9
20 min	0	0	0	0	1	5	7	7	7	7
40 min	0	2	3	4	5	7	6	6	6	6
60 min	0	2	3	4	5	7	6	6	6	6
80 min	0	4	5	6	7	10	10	10	10	10

From Table-1 it is clear that the germination of seeds of Cicer arientinum starts on 2nd day in control. The germination starts on second day in seeds which are kept for 40 min, 60 min and 80 min in refrigerator at 0^0 C. There is no germination starts on 2nd day in seeds which are kept for 20 min in refrigerator at 0^0 C. The number of seed germination in 20 min starts from 5th day increasing with one seed to the seven seeds on 10th day. Number of seed germination in Cicer arientium of 40 min and 60 min are same. They starts from 2nd day with 2 seeds increase up to 10th day with 6 seeds. Maximum germination is 10 seeds on 10th day of 80 min chilled seeds starting from 2nd day with 4 seeds.

The overall conclusion from discussion is to draw as, the germination of seeds of Cicer arientinum is more in 80 min chilled seeds than control and other treated seeds. It means 80 min cooling treatment is stimulating and useful to germination process.

Table 2:- Effect of Cold pre-treatment at various duration on germination percentage in Cicer arientinum

Cooling Treatment	Seed germination percentage									
	Day One	Day Two	Day Three	Day Four	Day Five	Day Six	Day Seven	Day Eight	Day Nine	Day Ten
Control	0	30%	50%	60%	70%	80%	90%	90%	90%	90%
20 min	0	0	0	0	10%	50%	70%	70%	70%	70%
40 min	0	20%	30%	40%	50%	70%	60%	60%	60%	60%
60 min	0	20%	30%	40%	50%	70%	60%	60%	60%	60%
80 min	0	40%	50%	60%	70%	100%	100%	100%	100%	100%

Table-2 shows the seed germination percentage of Cicer arientinum after pre-treatment of cooling. It shows the seed germination percentage per day up to 10 days of experiments for control and treated conditions from table, it is clear that seed germination percentage is maximum i.e. 100% from 6^{th} day to 10^{th} day of 80 min chilled seeds of Cicer arientinum. While germination percentage is minimum in the seeds which are chilled for 20 min. On 5^{th} day it is 10% and 70% on 10^{th} day. The percentage of seed germination in seeds which are chilled for 40 min and 60 min are same i.e.it starts from 2^{nd} day with 20 % and on 10 day it is 60%. In control seeds the seed germination percentage is 90% on 10^{th} day.

It is concluded that seed germination percentage is more in the seeds which are chilled for 80 min than control seeds and the seeds which are chilled for 20 min, 40 min and 60 min . As the duration of treatment of cooling increases, the favorable effect of the seed increases. The maximum adverse effect seen in the seeds cooled for 20 min.

Table 3:-Effect of Cold pre-treatment at various duration on plumule in Cicer arientium.

Cooling Treatment	Formation of Plumule	
	Initiation	No. of seeds showing plumule
Control	5^{th} day	06
20 min	5^{th} day	04
40 min	6^{th} day	02
60 min	5^{th} day	02
80 min	5^{th} day	03

Now we will see the progress of Cicer arientium seeds in the form of plumule. It is clear that the maximum number of seeds showing plumule in control starts from 5^{th} day. It shows the 6 number of seeds showing plumule. The formation of plumule in 20 min chilled seeds starts from 5^{th} day with 4 number of seeds showing plumule. The formation of plumule of 40 min and 60 min chilled seeds starts from 6^{th} day and 5^{th} day respectively. Both are having same number of seeds showing plumule i.e. 2. The number of formation of plumule in 80 min chilled seeds starts from 5^{th} day is 3.

The above observation arrives at the conclusion that the number of seeds showing plumule in Cicer arientium are affected due to cooled pre-treatment.

Table 4:- Effect of Cold pre-treatment at various duration on average of shoot length in Cicer arientium.

Cooling Treatment	Average shoot length on 10^{th} day of seed germination
Control	6.6 cm
20 min	3.7 cm
40 min	7.4 cm
60 min	3.0 cm
80 min	4.4 cm

From Table-4 it is clear that seeds of Cicer arientium which are chilled for 40 min shows maximum average shoot length. i.e. 7.4 cm. The average root length on 10^{th} day of seed germination of

control is 6.6 cm. The average root length on 10th day of seed germination is 3.7 cm, 3.0 cm and 4.4 cm of the seeds which are chilled for 20 min, 60 min, and 80 min respectively. The seeds of Cicer arientium which are chilled for 60 min shows minimum average shoot length. In Cicer arientium the treatment of pre-cooling at 0^0C for 40 min is more advantageous than control seeds.

Table 5:- Effect of Cold pre-treatment at various duration on average of radical length in Cicer arientium.

Cooling Treatment	Average radical length on 10th day of seed germination
Control	2.5 cm
20 min	2.5 cm
40 min	2.0 cm
60 min	1.6 cm
80 min	1.8 cm

From Table 5 it is clear that the control seeds and the seeds which are chilled for 20 min shows maximum average radical length. The length of radical of both seeds is 2.5 cm. The average length of radical of seeds which are chilled for 40 min is 2.0 cm. The minimum length of radical is seen in the seeds which are chilled for 60 min. i.e. 1.6 cm. The average length of radical of 80 min chilled seeds is 1.8 cm.

The overall conclusion from discussion is to draw as, maximum average length of radical is seen in control as well as the seeds which are chilled for 20 min.

Conclusion

To study seed germination in Cicer arientinum under chilling pre-treatment at various time duration. The germination of seeds per day, percentage of seed germination, Formation of plumule, average shoot length, average radical length in cm are parameters under study. The germination of seeds of Cicer arientinum is more in 80 min chilled seeds than control and other treated seeds.The seed germination percentage is more in the seeds which are chilled for 80 min than control seeds and the seeds which are chilled for 20 min, 40 min and 60 min . The number of seeds showing plumule in Cicer arientium are affected due to cooled pre-treatment. . The seeds of Cicer arientium which are chilled for 60 min shows minimum average shoot length. Maximum average length of radical is seen in control as well as the seeds which are chilled for 20 min

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ANALYSIS OF ANTINUTRITIONAL FACTORS FROM SOME WILD VEGETABLES

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Wild vegetables are economic source for adivashi people in Poladpur and adjoining areas during rainy season. The nutritional value of a food depends upon its nutritional contents and their digestibility and the presence or absence of antinutrients and toxic factors. As the wild vegetables contain antinutritional factors that can affect the availability of the nutrients. Antinutritional factor is known to interfere with metabolic processes such that growth and bioavailability of nutrients are negatively influenced (Abara, 2003; Binita and Khetarpau, 1997). According to Ademoroti (1996), phytate and oxalates have the ability to form chelates with di-and trivalent metallic ions such as Cd, Mg, Zn and Fe to form poorly soluble compounds that are not readily absorbed from the gastrointestinal tract thus decreasing their bioavailability. He further stated phytate inhibits the functions of some digestive enzymes. It has also been reported that oxalates causes irritation and swelling in the month and throat (Ladeji, et al 2004)

The purpose of this study therefore is to evaluate the levels of anti-nutritional factors of some common wild vegetables in Poladpur region of Raigad district. Wild vegetables like ***Cleorodendrum serratum***, ***Chlorophytum borivilianum, Holarrhena antidysenterica Colocasia esculenta*** **and** ***Cassia obtusifolia*** which are utilized by people are analysed for their antinutritional factors and discussed here

Material and Methods:

Wild vegetables selected for study purpose were collected locally from nearby villages. Leaves of *Cleorodendrum, Chlorophytum, Colocasia and Cassia* separated from plants. Pods and flowers of *Holarrhena* were used as vegetable also separated from plant. Samples were washed to remove dirt and dried at 50^0C in hot air oven. Samples were powdered with grinding machine and stored in airtight container and used for analysis.

Total Oxalate:

Total oxalate was determined according to Day and Underwood (1986) procedure. 1 g of the ground powder was taken into 100 ml conical flask. 75 ml of 1.5 N H_2SO_4 was added. The solution was carefully stirred intermittently with a magnetic stirrer for 1 h and filtered using Whatman No.1 filter paper. The filtrate (25 ml) was then titrated while hot against 0.1 M KMnO4 solution until a faint pink colour appeared and persisted for at least 30 sec. Prepare a standard graph by using 0.1mg/ml oxalic acid. Finally, oxalate content was expressed as milligram per gram dry wt.

Estimation of Tannins

Weight 0.5gm of powder transfer in 250ml conical flask. 75ml water was added in the sample. Heat the flask gently and boil for 30 mins and filtered through Whatman No.1 filter paper. Make up the volume 100ml with distilled water. Transfer 1ml of sample extract to 100ml volumetric flask containing 75ml water. Add 5ml Folin Denis reagent, 10ml of sodium carbonate solution and dilute 100ml of distilled water. Shake well read the absorbance at 700nm after 30mins. If absorbance is greater than 0.7, make a 1+4 dilution of the sample. Prepare a blank with water instead of the sample. Prepare a standard graph by using 0.1mg/ml tannic acid.

Estimation of Nitrate

The nitrate contains in vegetable samples were determined using rapid colorimetric method by Cataldo *et al.* In 50ml test tube 100mg of powder was suspended in 10ml deionized water. The suspension was incubated at 45ºC for 1 hr. After incubation sample was filtered through Whatman No.1 filter paper.

The residue filtrate was taken for nitrate estimation. In 50ml test tubes 0.2 ml of extract mixed with 0.8 ml 5% salicylic acid (W/V) in Conc.H2SO4. After 20
min at room temperature 19ml of 2N NaOH was added slowly to raise the pH above 12. Samples were cooled to room temperature and absorbance was recorded at 410 nm. Instead of extract, distilled water was used to prepare blank. The standard curve was prepared from 1M KNO3 and from this, nitrate content was calculated.

Estimation of Phytic Acid

Phytate content was determined by the method of Wheeler and Ferrel (1971) with minor modification. Three grams sample was mixed in 40 ml of 10% TCA in a 125 ml flask and shaken the same with mechanical shaker for 2 hrs. This sample mixer was centrifuged at 3000 rpm for 20 min. To a 50 ml centrifuge tube, 10 ml of the supernatant was mixed with 4 ml of FeCl3 solution by rapid blowing from the pipette. The solution was heated then in boiling water bath for 45 min. To make the supernatant clear, one or two drops of 3% sodium sulphate in 10% TCA was added and continued heating; then centrifuged for 10 to 15 min at 3000 rpm and finally the clear supernatant was decanted. The precipitate so obtained was washed twice by dispersing in 25 ml 10% TCA and heated again in boiling water for 10 min and centrifuged after cooling to room temperature. The precipitate was again dispersed in a few ml of water followed by addition of 3 ml of 1.5 N NaOH and made the volume upto 30 ml with distilled water. After heated in boiling water for 30 min, the solution was filtered with Whatman No 2 paper; the precipitate was washed with 70 ml hot water and the filtrate was discarded. The precipitate obtained on the filter paper was then dissolved with 40 ml hot HNO3 (3.2 N) into a 100 ml volumetric flask. A 5 ml aliquot taken in 100 ml volumetric flask was diluted to 70 ml with dist. Water followed by addition of 20 ml 1.5 M potassium thiocynate (KSCN). The pinkish-red colour so obtained was measured immediately (within 1 min) at 470 nm in a colorimeter with reference to the Ferric Ammonium sulphate as standard. The phytate content was expressed as mg/g dry wt.

Results and Discussions

Total oxalates:

Oxalates is a dicarboxylic acid and is found in the form of soluble salts of potassium and sodium and as insoluble salts of calcium, magnesium and iron in algae, fungi, lichens, ferns and higher plants. Oxalate is one of the antinutritional factors are widely distributed in plant foods. Presence of oxalates in food causes irritation in the mouth and interfere with absorption of divalent minerals particularly calcium by forming insoluble salts with them (Hassan and Umar, 2004). Consumption of oxalates may also result in kidney disease (Hassan *et al.*, 2007). Toxic level for humans was set as 2 – 5 g (Hassan and Umar, 2004).

Total oxalate of seven wild vegetables from Poladpur is depicted in Table 1. The value ranges from 3.24 to 32.75 mg g^{-1}. High total oxalate content found in *Cassia obtusifolia* leaves and flowers of *Holarrhena antidysenterica* and lower value is found in *Chlorophytum borivilianum* (3.24 mg g^{-}1dry wt.).

Umar *et al.* (2011) reported 202.50 mg 100 g^{-1} (2.03 mg g^{-}1dry wt).). Gupta *et al.*(2005) analyzed total oxalates from thirteen underutilized green leafy vegetables. They found 1410, 1270, 1250 and 1080 mg100 g^{-1}fresh wt. from *Digera arvensis*, *Amaranthus tricolor*, *Boerhaavia diffusa* and *Trianthema portulacastrum* respectively. These values are lower than current investigation. Pattan and Devi (2014) investigated 15 unconventional leafy vegetables from markets of Bangalore city. They found higher total oxalates from *Brassica oleracea* (27.54 mg g^{-1}) and *Moringa pterygosperm* (26.28mg g^{-1}). These values are lower than current investigation. *Amaranthus graecizans*, *Celosia argentea* and *Pachycymbium quadrifida* contained the highest level of oxalic acid with 14067, 12706 and 10162 mg/100g dry wt., respectively (Getachew, 2013). The values of present investigation are lower than that of *A. graecizans*, *C. argentea* and *P. quadrifida.*

Table 1. Levels of Antinutritional factors in wild vegetables of Poladpur

Sr. No.	Name of plant	Total oxalates mg g^{-1} dry wt	Tannins g100 g^{-1} dry wt.	Nitrate mg g^{-1} dry wt	Phytic acid mg g^{-1} dry wt
1	*Cleorodendrum serratum* (Leaves)	6.49	1.67	**15.50**	**32.91**
2	Pods *of Holarrhena antidysenterica*(Pods)	9.25	**3.75**	**22.14**	**14.56**
3	*Holarrhena antidysenterica*(flowers)	**32.25**	**2.56**	**11.65**	**70.69**
4	*Chlorophytum borivilianum*(Leaves)	3.24	0.26	0.45	12.32
5	*Colocasia esculenta*(Leaves)	12.50	0.58	2.69	8.97
6	*Cassia obtusifolia*(Leaves)	**32.75**	0.63	4.48	15.00

8. Tannins:

Tannins are basically polyphenolic compounds having complex mixture and are present in many plants. They form complexes with proteins, starches and digestive enzymes thereby reducing the nutritional value of foods (Serrano *et al.* 2009) and causing growth depression. They also interfere with protein absorption and reduce iron availability. Tannins are known to inhibit activities of digestive enzymes (Jumbunathan, 1981) hence presence of even low levels of tannins is not desirable from nutritional point of view.

Table 1 reveals tannin content in wild vegetables of Poladpur. Pod (3.75 g100 g^{-1} dry wt.) flowers (2.56 g100 g^{-1} dry wt.) of *Holarrhena antidysenterica* and *Cleorodendrum serratum* (1.67g100 g^{-1} dry wt.) had higher tannins.

Gupta *et al.* (2005) reported tannin content of underutilized green leafy vegetables and the tannin values ranged between 61 and 205 mg/100 g with the exception of *Coleus aromaticus* (15 mg/100 g) and *Delonix elata* (1330 mg/100 g). Tannins of present study had higher values than those values reported by Gupta *et al.* (2005). Tannins content in unconventional leafy vegetables in Bangalore City investigated by Pattan and Devi (2014) and values of tannins ranged between 161mg/100g dry wt.– 1688 mg/100g dry wt., with lowest content in Anne soppu, *Celosia argentea* (161.60mg) and highest in *Gynandropsis pentaphylla.* Sood *et al.* (2012) reported higher tannin content in four cultivars of *Chenopodium. Ximenia caffra* has the highest with 6314 mg 100 g dry wt. (Getachew, 2013). The tannin content of pods of *Holarrhena antidysenterica* has lower than that of fruit of *Ximenia caffra.*

Nitrate content:

Studies have indicated that nitrates generally cause methaemoglobinaemia in young infants, but not in adults. However when reduced to nitric oxide it plays an important role in the body as it provides host defense against numerous micro-organisms (Benjamin, 2000).

The nitrate content in wild vegetables of Poladpur has been shown in Table 1. It is evident from the results that the concentration of nitrate in pods (22.14 mg g^{-1}**)** and flowers (11.65 mg g^{-1}) of *Holarrhena species and* leaves (15.50 mg g^{-1}) of *Cleorodendrum serratum* is high. Umar *et al.* (2011) reported nitrate content 25 mg $100g^{-1}$ in *Amaranthus viridis* leaves. Fytianos and Zarogiannis (1999) reported that spinach contains high nitrate concentrations (1000 – 3000 ppm i.e. 0.1 to 0.3%) while as high as 6000 ppm (0.6%) has been reported in lettuce. Cabbage contains nitrate at concentrations ranging from several hundreds to over 1000 ppm. The nitrate content of spinach and lettuce is considered to be the highest among number of vegetables. The European Commission (EC) has set

maximum allowable level of nitrates in leafy green crops (Anon, 2005) and they have preferred lettuce nitrate level as maximum allowable limit. Level of Nitrate contents of pods and flowers *Holarrhena species* and leaves of *Cleorodendrum serratum* had beyond the maximum allowable level of nitrates in leafy green crops.

Phytic Acid (1, 2, 3, 4, 5, 6 hexaakis dihydrogen phosphate myoinositol):

Phytic acid is a common storage form of phosphorus in plants and also considered as an antinutritional factor. The phytic acid forms complex with nutritionally essential elements and interfere with proteolytic digestion. This activity is considered as antinutritional activity. The phosphorus in phytic acid is not nutritionally available to the monogastric animals. Phytic acid also interferes with calcium and iron absorption (Wheeler and Ferrel, 1971). Hence, estimation of phytic acid in wild vegetables is essential.

Table 1 presents results of phytic acid contents from wild vegetables. Results reveals that highest phytic acid content in flowers and pods of *Holarrhena antidysenterica* and leaves of *Cleorodendrum serratum.* Umar *et al.* (2011) reported phytate content 1326mg $100g^{-1}$ in spiny *Amaranthus viridis.* High amount of phytate was also reported in some leafy vegetables such as *Tralinum triangulare* (2341.1 mg/$100g^{-1}$), *V. amygdalina* (1466.7 mg/100g) and *Basella alba* (2030.8 mg/100g) (Akindahunsi and Oboh, 1999; Oboh *et al.*, 2005). Aberoumand and Deokule (2009) recorded phytate content in *Portulaca oleracea* (823.6 mg/100g). Phytate content 1.01 g $100g^{-1}$ in *Colocasia esculenta* also reported by Adejumo *et al.* (2013). These results are in the range of present investigation.

Summary and Conclusions:

Wild vegetables are rich in nutrients such as proteins, vitamins, and mineral nutrients etc. however these also possesses certain anti-nutritional factors which interfere with metabolic processes such that growth and bioavailability of nutrients are negatively influenced. Hence analysis of wild vegetable is important. In present investigation, attempts have been made to estimate anti-nutritional factors in wild vegetable of Poladpur.

The significant findings of the present work are summarized as follows.

1. High total oxalate content found in *Cassia obtusifolia* leaves and flowers of *Holarrhena antidysenterica.* But, these values are below toxic level.
2. Pod and flowers of *Holarrhena species* and *Cleorodendrum serratum* had higher tannins. These values are below toxic level.
3. Nitrate contents of pods and flowers *Holarrhena species* and leaves of *Cleorodendrum serratum* had highest nitrates i.e. beyond the maximum allowable level of nitrates in leafy green crops.
4. Phytic acid content in flowers and pods of *Holarrhena antidysenterica* and leaves of *Cleorodendrum serratum* found to be higher.

Cleorodendrum serratum, flowers and pods of *Holarrhena antidysenterica* had somewhat highest antinutritional factors. *Cassia obtusifolia* leaves had medium level of antinutritional factors and remaining others medium level of antinutritional factors. This indicates *Cleorodendrum serratum;* flowers and pods of *Holarrhena antidysenterica* and *Cassia obtusifolia* have antinutritional status and should be used by using processing techniques.

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TO STUDY THE IMPACT OF CERTAIN EXTERNAL CONDITION ON SEED GERMINATION IN VICIA FABA (FIELD BEAN)

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Abstract
Aqueous extract of Spinach leaves and prawns of 1%, 5%, 10% and 20% (w/v) was treated to vicia faba seeds was studied. Treated seeds show late germination, decreased rate of germination percentage, less redicle length and no plumule formation. Beginning of germination delayed more by prawn extract treatment than spinach leaves extract treatment. Seed germination percentage is more affected by prawn extract treatment than spinach leaves extract treatment. Prawn extract treatment is more adverse in terms of radicle growth during germination than Spinach leaves extract treatment to seeds of Vicia faba. There is no plumule formation takes place in both treated seeds during germination. The adverse effect of spinach leaves extract treatment and prawn extract goes on increasing treatment and prawn extract goes on increasing with increasing concentration extract.

INTRODUCTION-

Vicia faba of family fabaceae commonly called as Field bean, Broad bean, fava bean, bell bean or tic bean.

Cited from http:// en.wikipedia.org/wiki/ Vicia faba, field bean is native to North Africa. The field beans are dense with nutrition. It does not have saturated fat or cholesterol and contain a high concentration of thiamin, vitamin k, vitamin B-6, Potassium, copper, selenium, zinc and magnesium. They are also an inexpensive source of lean protein. There is an inverse relationship between per capita income level and consumption of legumes such as field bean. Therefore, the Vicia faba is selected for present study.

The germination is one of vital process in plant physiology. According to Raven et al (2005) seed germination depend upon internal and external conditions. In present study an attempt is made to study the impact of certain external conditions. In present study an attempt is made to study an attempt is made to study the impact of certain external condition on seed germination in Vicia faba (field bean). Vegetable extract of spinach leaves and non vegetable extract of prawn extract are used as external factors to observe effect on seed germination of Vicia faba.

MATERIAL AND METHOD-

Vicia faba (field bean) seeds are selected for present study. Two sets of Petri plates with blotting filter paper at base are taken. 10 seeds of Vicia faba are placed in each petridish. Adequate distilled water is applied for first petridish as control. Treated petridishes are applied adequate quantity of 1 %(w/volume) 5%, 10% and 20% aqueous Extract of Spinach leaves. The experiment is repeated as it is for second time. The observations of both experiments are considered as average.

Similarly, apply 1%, 5%, 10% and 20% aqueous extract of dried prawns to 2 replicas of 4 petridishes with 10 seeds of field beans each. The control reference kept common.

The germination of seeds is treated as one of the important criteria to study the impact of vegetable extract and non-vegetable extract on field bean. From day one of experiment up to 10^{th} day, the number of seeds (out of 10) underwent germination were observed. Similarly the redicle length is also treated as another parameter for study of treated and control seeds germination. Average plumule

length formation on 10th day of germination is considered as another mean to find the impact of vegetable extract on seed germination process in field bean.

***RESULT AND DISCUSSION-**

Table I – A Effect of Spinach leaves extract on emergence of Vicia faba.

Treatment (Spinach leaves extract)	Number of seeds germination per day/s									
	1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	7th Day	8th Day	9th Day	10th Day
Control	0	3	3	4	5	6	8	8	10	10
1%	0	1	2	2	3	3	5	5	6	6
5%	0	0	0	1	1	2	2	3	4	4
10%	0	0	0	0	1	2	2	3	3	3
15%	0	0	0	0	0	0	01	01	01	01

Table I-B Effect of Spinach leaves (vegetable) extract on germination percentage in seeds of Vicia faba.

Treatment (Spinach leaves extract)	Number of seeds germination per day/s									
	1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	7th Day	8th Day	9th Day	10th Day
Control	0	30	30	40	50	60	80	80	100	100
1%	0	10	20	20	30	30	50	50	60	60
5%	0	0	0	10	10	20	20	30	40	40
10%	0	0	0	0	10	20	20	30	30	30
15%	0	0	0	0	0	0	10	10	10	10

Table I-C Effect of spinach leaves extract on radicle (root) length in Vicia faba.

Treatment Spinach leaves extract	Average radicle length in Cm on 10th day of treatment
Control	2.50 cm
1%	1.80 cm
5%	1.02 cm
10%	0.3 cm
15%	0.1 cm

Table I-D Effect of vegetable extracts (spinach leaves extract) on plumule (shoot) length during seed germination of Vicia faba.

Treatment Spinach leaves extract	Average radicle length in Cm on 10th day of treatment
Control	1.80 cm
1%	-
5%	-
10%	-
15%	-

Table I-A, I-B, I-C and I-D shows germination of field bean seeds from day one to day 10 in control and spinach extract treated seeds germination at 1%, 5%, 10% and 20% concentration, average radicle length and average plumule length on 10th day of experiment.

From Table I-A it is clear that the germination started on second day in control and 1% Spinach treatment. In 5% and 10% spinach extract treatment, the germination started on 4th day and 5th day respectively. While in 20% spinach extract treatment, the germination was stimulated on seventh day. It

means the spinach extract treatment shows late germination. It delays the seed germination in Vicia faba.

The seeds germination percentage from first day to 10th day is also seen in Table I-B in field bean under controlled and treated conditions. It is observed that seed germination is 100% in control on 9th day of germination. In 1% spinach treatment, it is 60% germination, while in 5% spinach treatment and 10% spinach treatment it is 40% and 30% respectively on 9th day of germination. The 20% spinach treated seeds of Vicia faba shows only 10% germination percentage even on 9th day of germination. It shows that rate of germinations more in control while rate of germination percentage is less in spinach leaves extract treated seeds in Vicia faba.

The rate of germination percentage goes on decreasing as the concentration of spinach leaves extract treatment goes on increasing.

The Table I-B shows the 100% seed germination in control seeds of field bean on Tenth day while 60%, 40%, 30% and 10% seed germination rate in 1%, 5%, 10% and 20% spinach leaves extract treated seeds respectively. It means the rate of seed germination is less in Spinach leaves extract treated leaves as compared to control.

From the Table I-C, it is clear that average redicle length is 2.50 cm in 1% Spinach leaves treated seeds it is 1.80cm, 1.20 cm, 0.3 cm and 0.1 cm in 5%, 10%, 20% Spinach leaves extract treated seeds of Vicia faba respectively, It is clear from these observations that average redicle length is affected due to spinach leaves extract treatment. The effect goes on increasing as the concentration of spinach leaves extract also goes on increasing.

The shoot length i.e. plumule length of control and treated seeds during germination on 10th day of treatment is shown in Table I-D. It is observed that the plumule formation is only seen in control seeds of Vicia faba as compared to Spinach leaves extract treated seeds. It means the treatment of spinach leaves extract shows adverse effect on the plumule formation during germination in Vicia faba.

Table II – A Effect of Prawn extract on emergence of Vicia faba.

Treatment (Prawn extract)	**Number of seed/s germination per day/s**									
	1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	7th Day	8th Day	9th Day	10th Day
Control	0	4	6	8	9	10	10	10	10	10
1%	0	0	0	0	1	1	2	3	4	5
5%	0	0	0	0	1	1	2	3	3	4
10%	0	0	0	0	0	0	2	2	2	2
15%	0	0	0	0	0	0	0	0	0	0

The Table II-A Shows the effect of prawn extract on the seed germination in Vicia faba. It is seen from observation that the seed germination started in control seeds on second day of experiment. The seed germination started on 5th day of treatment in 1% prawn extract treatment. In 5% extract treated seeds, the seed germination started at 5th day of treatment. In 10 % prawn extract treated seeds, the seed germination started at 7th day of treatment. In 20% prawn extract treated seeds, the seed germination not takes place even on 10th day of germination. It means the beginning of seed germination is affected due to the treatment of prawn extract. It is further added the delay in beginning of seed goes on decreasing as the concentration of prawn extract treatment goes on increasing.

Table II-B Shown the effect of percentage of concentration of prawn extract on seed germination in Vicia faba. From these observations it is clear that the seed percentage goes on increasing from first to 10th day of germination in control seeds. It is 100% rate of germination on 6th day of treatment in control seeds on 10th day of treatment. It is 40% and 20% rate of seed germination in 5% and 10% prawn extract treated seeds on 10th day of treatment. However in 20% prawn extract treatment, the seed germination rate is nil even on 10th day of experiment. It means the rate of seed

germination is affected by prawn extract treatment in Vicia faba. The effect goes on adverse as the concentration of prawn extract goes on increasing.

Table II-C Effect of Prawn extract on redicle (root) length in Vicia faba.

Treatment Spinach leaves extract	Average radicle length in Cm on 10^{th} day of treatment
Control	2.30 cm
1%	1.80 cm
5%	0.90
10%	0.57
15%	0

Table II-C Shows the average radicle length of seeds in vicia faba on 10^{th} day of germination in control and prawn extract treated seeds. It is clear from table II-C that the average length (redicle) is 2.30 cm in control seeds as on 10^{th} day of germination. It is 1.80 cm, 0.90 cm, 0.57 cm in 1%, 5% and 10% prawn extract treated seeds while there is no redicle formation in 20% prawn extract seeds. It indicates that the prawn extract treatment has adverse effect on radicle length in seeds of Vicia faba. The adverse effect of prawn extract treatment goes on increasing as the concentration of prawn extract treatment goes on increasing from 1% to 20%.

Table II-D Effect of prawn extract on plumule (shoot) length during seed germination of Vicia faba.

Treatment (Prawn Extract)	Average plumule (shoot)length in Cm on 10^{th} day of Treatment
Control	2.30 cm
1%	-
5%	-
10%	-
15%	-

Table II-D Shows effect of prawn extract treatment on plumule (shoot) formation in seeds of Vicia faba. It is clear from Table II-D that the length of plumule is 2.30 cm in control seeds. There is no plumule formation in 1%, 5%, 10% and 20% prawn extract treated seeds. It means there is inhibiting effect of prawn extract treatment plumule formation in seeds of Vicia faba. When observation of Table I-A and Table II-A are compared, it is found that seed germination begin on 2^{nd} day in controlled seeds of Vicia Faba. The 1% Spinach leaves extract treated seed shows beginning of germination on 2^{nd} day while 1% prawn extract treated seeds shows germination beginning on 5^{th} day. The 1%, 5%, 10% and 20% Spinach leaves extract treated seeds shows germination beginning on 4^{th} day, 5^{th} day and 7^{th} day of treatment respectively. However, in 1%, 5%, 10% and 20% prawn extract treated seeds of Vicia Faba shows beginning of germination on 5^{th} day, 5^{th} day, 7^{th}day and no germination respectively. It means beginning of germination delayed more by Prawn extract treatment than the Spinach leaves extract treatment on seeds of Vicia faba.

Comparative account of Table I-B and Table II-B shows that the germination percentage of control seeds of Vicia faba is about 100% on 10^{th} day of treatment. While it is 60%, 40%, 30% and 10% in 1%, 5%, 10% and 20% Spinach extract treated seeds. It is 50%, 40%, 20% and zero in 1%, 5%, 10% and 20% prawn extract treated seeds. It means seed germination percentage is more affected by prawn extract treatment than Spinach leaves extract treatment.

From Table I-C and Table II-C, it is observed that the radicle length is maximum (2.50 cm) in control seeds of Vicia faba. The length of radicle is 1.80cm, 1.02cm, 0.3cm and 0.1cm in 1%, 5%, 10% and 20% Spinach leaves extract treated seeds during germination on 10^{th} day of treatment. The length of radicle is 1.80cm, 0.90cm, 0.57cm and 0cm in seeds. It means, the prawn extract treatment is more adverse in terms of radicle growth during germination than Spinach leaves extract is seeds of Vicia faba.

Table I-D and Table II-D comparative account shows that shoot formation in control, however, there is no shoot (plumule) formation in either Spinach leaves extract treated seeds or prawn extract treated seeds of Vicia faba. It means either Spinach leaves extract treatment or prawn extract treatment affect the plumule (shoot) formation.

*Analia perello, Martin Gruhlke and slusarenko (2013) published a research paper. In this paper the effect of garlic extract on seed germination of wheat seed. This study confirm that natural mycoflora present in wheat grain was capable of causing poor seed germination and was capable of negatively influencing seeding growth. When treatment with Garlic juice containing allicin. It results in reduction of infection. Seeds treated with garlic juice had a relatively better germination percentage.

*Ziaebrahimi L, et.al.pak J Biol Sci 2007

In this, research paper showed that effect of water extracts of eucalyptus leaves examined on germination and growth of three wheat cultivar seeds and seedlings. Results showed that germination percentage strongly decreased leaf and root lengths also affected and dry and wet weights of both roots and shoots showed similar change patterns. Activity of polyphenoloxidases increased only in one of three cultivars and again roots showed more activity of this enzyme is response to eucalyptus extract.

*In May 2005, Plant ecology Laboratory of the Department of Crop Botany, Bangladesh, Investigate the effects of water soluble extract from different parts of Banana plant on seed germination and seeding growth of some vegetable crops. The test crops were lettuce, radish, cucumber, ribbed gourd, bean and okra.

Among the extracts from different parts of banana plant, extract from rhizome showed strongest inhibition on the seed germination and seeding growth of the test crop. The test plant species responded differently to the rhizome extract and lettuce seedling was found most sensitive

*An J, et al.chemosphere.2009.

Biochemical responses of wheat(Triticum aestivum) seedling stressed by two typical personal care products- Triclosan (TCS) and galaxolide(HHCB).The results showed that wheat shoot and root elongation was significantly inhibited by 50-250 mg L(-1) TCS and HHCB. Wheat roots were sensitive TCS, while shoots were sensitive to HHCB.

*Licx, et. al.J Environ sci (china). 2007

The effect of Arsenic(AS) were investigated on seed germination, root and shoot length and their biomass and some other factors to elucidate the toxicity of As. The results indicated as could exert harmfulness in the early development stage of wheat at inappropriate concentrations.

*Effect of scialert.net.Allelopathic Effects of

Asian Journal of plant Sciences

Izzet Kadioglu and Yusuf Yanar

Volume 3(4):472-475, 2004

This study examined the effects of extracts of plants, mostly weeds. Also, chemical compounds in extracts having significant positive or negative allelopathic effects on other plants, should be studied in detail for their specific effects on plant growth.

E.A.Grant, W.G.Sallans

June 1964, contribution No.129, Reaserch station Canada

Seeds of four legumes and four grasses were germinated in the presence of aqueous extracts of the same species, using distilled water as a check. Based on the number of significant reaction to the extracts, the species may be classified in the following order of decreasing inhibition-Alfalfa and timothy were the species least affected by the extracts while reed canary grass was the most susceptible. With the exception of alfalfa, extracts of aerial portions of the plants had greater inhibitory effects than root extracts.

*S.Roy, M.Asaduzzaman, M.H.R.Pramanik and A.K.M.A.Prodhan (2006)

In this paper the effect of Banana plant extracts revealed a significant inhibition on seed germination and seedling growth of lettuce and the degree of inhibition increases with the increase of extract concentration.

Rhizome extract strongly delayed and inhibited the germination of lettuce.

*M.S.A.Mamun and M.Shahjahan (2011) Agril.Res.36 (4):733-739-

An experiment was conducted to determine the effect of some indigenous plant extracts on the germination of wheat seeds. This study showed that the seeds treated with plant materials did not adversely affect the seed germination.

*According to Chang Naihang (1996), the effect of vermicompost on seed germination.

The effect of vermicompost of Salvinia, Eichhornia, Chromolaena and Parthenium on percentage of seed germination, shoot and root length and wet and dry weight of wheat are measured. Regarding that it has concluded that, the lower concentration of vermicompost extract enhances the root length, shoot length, number of roots and wet and dry weights of seedlings in all the wheat seeds tested.

*M. A. I. Talukdar.M.Rahaman, B.Roy and K.C.Saha.

In this paper the effect of aqueous extracts of different herbal plant leaves on the germination of selected vegetables are studied. A significant effect of aqueous extracts was found on the germination of vegetables throughout the growing period. In Turnip and Ladies finger it found to be maximum.

*Md. Zahangir Alam, Islam Hamim, MA Ali, M. Ashrafuzzaman, Bangladesh Agricultural University (BAU) (2014).

The result of the present investigation showed that, seed treatment with different physical, chemicals, biological and botanical agents especially Biofungicide, allamonda leaf extracts, neem leaf extracts and Chitosan solution is useful to prevent germination failure to produce healthy, disease free and morphologically strong seedling and to promote production of vigorous seedling.

*Eckhard Koch, Steven J.Roberts (2014) JKI, Institute for biological control, Darmstadt, Germany.

The paper gives an overview of approaches that have been taken to utilize the non-chemical methods for control of important seed borne pathogens of vegetables and small grain cereals. The treated plants include bacterial fungal diseases and viral diseases, which can be controlled in seeds.

Rishi P. Singh, K. Raja Reddy, in Advances in Agronomy, 2015.

This research shows the treatment technology in which it revealed that by using specific products and specific techniques can improve the growth environment for the seed, seedling and young plant. The seed is dressed with either a dry formulation of the seed treatment chemicals

*Alice D.Rao A.V.1986.Antifungal effects of plant extract on Drechslera oryzae in rice.Int.Rice Res.Newsl.12 (2):28.

In this research, the percent reduction in seed borne infection of target pathogenic fungi recorded in mungbean seeds were treated with five different treatments. All treatments were found to significantly reduce the occurences of seed borne fungi but did not completely control them. Plant extracts have played a significant role in the inhibition of seed borne pathogens such as fusarium oxysporum and in the improvement of seed quality and emergence of seed embryo.

Similarly, an attempt is made to study the impact of certain external conditions on seed germination of Vicia faba.

CONCLUSION-

Aqueous extract of spinach leaves and prawns of 1%,5%,10% and 20%(w/v) was treated to Vicia faba seeds was studied. Treated seeds show late germination, decreased rate of germination percentage, less radicle length and no plumule formation. Beginning of germination delayed more by prawn extract treatment than spinach leaves extract treatment. . Seed germination percentage is more affected by prawn extract treatment than spinach leaves extract treatment. Prawn extract treatment is more adverse in terms of radicle growth during germination than spinach leaves extract treatment to seeds of Vicia faba. There is no plumule formation takes place in both treated seeds during germination.

The adverse effect of spinach leaves extract treatment and prawn extract goes on increasing with increasing the concentration extracts.

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Effect of personal care products on seed germination.

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KAMALADEVI CHATTOPADHAY, FEMINIST FREEDOM FIGHTER AND CULTURE QUEEN

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1. Introduction :

Kamaladevis multi faced accomplishments and her Immense contribution in enriching India's cultural and Social fabric. Widely known for persuading mahatma Gandhi to call upon women to participate in civil dis obedience movements during india's freedom struggle. Kamladevi is among the handful of women who championed the rights of the fairer sex at that time.

She propounded that civil rights religious freedoms and political independence were all 'inter-related issues and worked relentlessly for the upliftment of women. She pioneered the co-operative movement which helped raise the socio-economic status of women around the country.

Born on April 3, 1903 in manglore (now magluru) Kamaladevi was married at the age of 14 and was widowed two years later. She then traveled to London to further her Education and after her return to india. Joined the 'Indian National congress in 1927'

Her career was one of many first from being the first woman to be arrested by British for selling contraband salt, to becoming the first woman to run for Legislative office. She was among the chosen few national leaders who had the privilege of signing the new constitution of india document after Independence.

Dubbed as culture queen of India Kamaladevi is credited as the drivin force behind the renaissance of Indian handicrafts handlooms and theatres in the post-Independence era.

1. She setup :

She went on to setup the famous theatre institute National School of Drama, sangeet Natak Akadami, Central cottage Industries Emporium and the crafts Council of India.

2. She received fellowship :

Kamaladevi is also the recipient of Sangeet Akadami fellowship the highest honour conferred by the Sangeet Akadami, India's National Academy of music, Dance & Drama. She passed away on October 29, 1988 at the age of 85.

3. A Revolutionary women :

Who broke every social and cultural norm of that era. She engaged in India's freedom struggle at the highest level as a critic who could ignored writing in new's papers, Journal's, as well as political documents. There are hardly any sub stantial writings by prominent modern history scholars on her life. A passionate life. Correct that neglect substantially and also stimulates a call for more on her life and work. Valume is composed of two introductory essays one by Dubois and the other by Lal both historians at the university of culifornia, Los Angeles CUCLA Both these essays are master pieces. I have yet to come across an essay on the history and evolution of feminism which is as inclusive and accurate as the one written by Dubois. Lal's introduction tracing the passion and politics in Kamaladevis life is equally brilliant in both depth and perspective.

In addition there is a section called critical assessment containing five essays written by scholars living in the united states and one in South Africa.

4. Kamaladevis Ten essays :

Ten essays have been selected for in clusion in another section called "Kamaladevis writing" some are from her own memories called 'Inner Recesses and outer spaces' published in 1986 initially by Indian Co-operative union (ICU) which she founded A later edition was printed by 'Nivogi Books' in 2014. The others are from her speeches and writings in journals and news papers, both in India and the united status (US).

5. About the Kamaladevis life :

Her father was senior civil servant and her mother was a supporter of both Pandit Ramabai and Sri Aurobindo. Her parents befriends many prominent freedom Righters and intellectuals such as mahadev Govind Rande and Gopal Krishna Gokhale, and women leader like Rumabai Rande and Annie Besant. This made the young Kamaladevi early enthusiast of the Swadeshi Nutionalist movement. However it does seem intriguing that such parents could have got her married age of 12/14 second husband. Harindranath Chattopaddyay after four years and bearing one son. Thoughout her life and her time in the freedom struggle, she faced resistance to her leadership from male comrades.

6. A New World :

She became the first women to be jailed by the British in 1930 a reflection of new level of energy that t he unleashing of womens involvement would bring to Nationalist movement. She was briefly released from jail in 1931. In time to contribute to the writing of the "Fundamental right's portion of the proposed constitution for an Independent India. She notes that she was the lone women involved and emphasizes the inclusion of an explicit quarantee of equal franchise rights for women something which the British had never allowed. "To me the clause" there should be no discrimination on the grounds of sex opened the gates to a new world.

One of her transforming experiences was when her father died and left no will and the property in which she and her mother had groun up, was given away to a step brother, who had never engaged with them the first women to stand for election in the madras presidency Council and lost only by a difference barely 55 votes while addressing 2000 peoples at the clock Tower maidan in the district of Bangalor in 1926. She said "for years you have been sending men to the councils some have been done something for the districts. Others have done nothings.

7. Coloured women :

While in America for 18 months during 1939-41. She aimed to increase American support for Indian Independence, while establishing connection with American feminists and African Americans and defending the rights of women and people of colour throughout the world. Kamaladevi championed a coloured consmopolitanism that defied narrow, chauvinist definitions of race, religion or nation, while simulantaneously encouraging the unity of coloured a crucial step towards the liberation of the entire coloured world" There is a telling poster of her used in the U.S. with the heading I am a colored woman."

Like many of the old order of freedom Righters and congress socialist she moved away from the congress and the new boundless energy, her skills, and her intellect, she addressed what could be a part of what M.K. Gandhi would have called the second freedom from wants she revived across the board, tribal arts being her Pavourite, and the hadloom industry. She helped setup National Institutions for the promotion of dance, music, and theatre, which continue to live in and embellish India. She was engaged with whole range of cultural expressions.

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NETWORK STRUCTURE OR TOPOLOGY

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Abstract
The geometrical arrangement of computer resources, remote devices and communication facilities is known as Network structure or Network topology. A computer network is comprised of nodes and links, a node is the end point of any branch in a computer, a terminal device, workstation or interconnecting equipment facility. A link is a communication path between two nodes. The terms "circuit" and "Channel" are frequently used as synonyms for the link. There are different types of the topologies like bus, ring, tree, mesh etc. However, we will consider five basic network structures- topology.

I. Introduction

Network Topology is the study of the arrangement or mapping of the elements (links, nodes, etc.) of a network interconnection between the nodes.

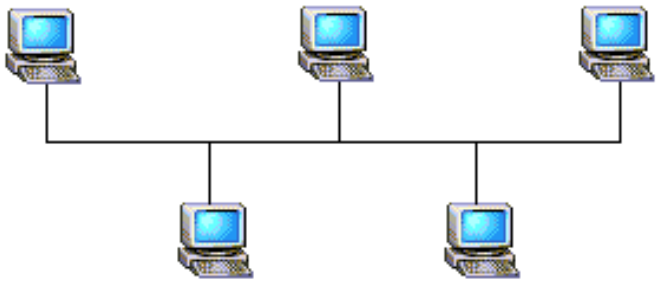
Topologies can be physical or logical. Physical Topology means the physical design of a network including the devices, location and cable installation. Logical Topology refers to the fact that how data actually transfers in a network as opposed to its design.

Some of the most common network topologies are:

- **Bus Topology**
- **Ring Topology**
- **Star Topology**
- **Mesh Topology**

I. Bus Topology

This structure is very popular for local area networks. In this structure or topology, a single network cable runs in the building or campus and all nodes are linked along with this communication line with two endpoints called the bus or backbone as show figure.



By this type of topology, if one node goes faulty all nodes may be affected as all nodes share the same cable for the sending and receiving of information. The cabling cost of bus systems is the least of all the different topologies. Each end of the cable is terminated using a special terminator.

[A]. Advantages:

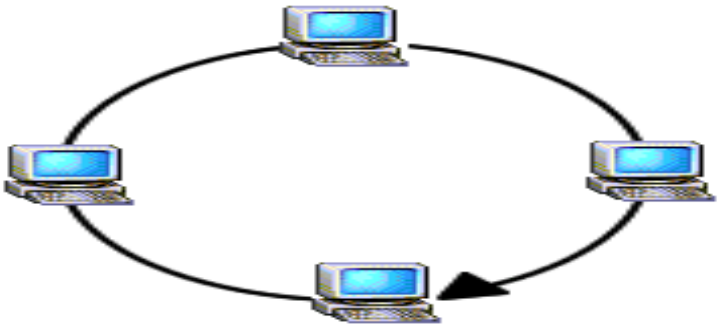
- Reliable in very small networks as well as easy to use and understand.
- Requires least amount of cable to connect the computers (nodes) together and therefore is less expensive than other cabling arrangements.
- It's easy to extend, Two cables can be easily joined with a connector, making a longer cable for more computers to join the network.
- A repeater can also be used to extend a bus configuration.

[B].Disadvantages:

- Heavy network traffic can slow a bus considerably because any computer can transmit at any time. But networks do not Coordinate when information is sent. Computer interrupting each other can use a lot of bandwidth.
- Each connection between two cables weakens the electrical signal.
- The bus configuration can be difficult to find and can cause the whole networks to stop functioning.

II. Ring Topology

In this topology, the network cable passes from one node to another until all nodes are connected in the form of a loop or ring. There is a direct point-to-point link between two neighboring nodes (the Next and the Previous). These links are unidirectional which ensures that transmission by a node traverses the whole ring and comes back to the node, which made the transmission as shown in figure.



Information travels around the ring from one node to the next. Each packet of data sent to the rink is prefixed by the address of the station to which it is being sent. When a packet of data arrives, the node checks to see if the packet address is the same as its own, if it is, it grabs the data in the packet. If the packet does not belong to it, it sends the packet to the next node in the ring.

Faulty nodes can be isolated from the ring. When the workstation is powered on, it connects itself to the ring. When power is off, it disconnects itself from the ring and allows the information to bypass the node.

The most common implementation of this topology is token ring. A break in the ring causes the entire network to fail.

Individual nodes can be isolated from the ring.

[A]. Advantages:

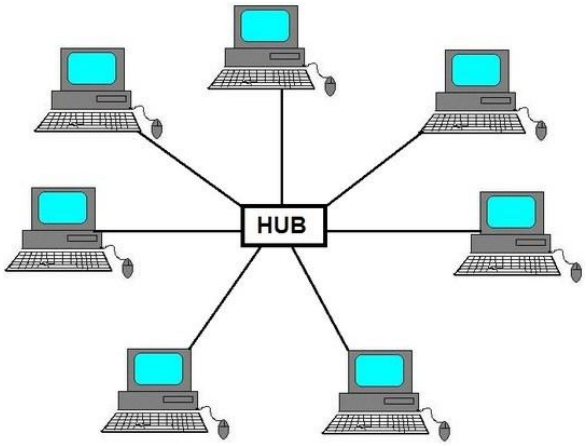
- Ring networks offer high performance for a small number of workstations or for larger networks where each station has a similar workload.
- Ring networks can span longer distances than other types of networks.
- Ring networks are easily extendable.
- Unlike Bus topology, there is no signal loss in Ring topology because the tokens are data packets that are re-generated at each node.

[B].Disadvantages:

- Relatively expensive and difficult to install
- Failure of one computer on the network can affect the whole network.
- It is difficult to find fault in a ring network.
- Adding or removing computers can disrupt the network.
- It is much slower than an Ethernet network under normal load.

III. Star Topology

Star topology uses a central hub through which, all components are connected. In a Star topology, the central hub is the host computer, and at the end of each connection is a terminal as shown in Figure.



Nodes communicate across the network by passing data through the hub. A star network uses a significant amount of cable as each terminal is wired back to the central hub, even if two terminals are side by side but several hundred meters away from the host. The central hub makes all routing decisions, and all other workstations can be simple.

An advantage of the star topology is that failure, in one of the terminals does not affect any other terminal; however, failure of the central hub affects all terminals. This type of topology is frequently used to connect terminals to a large time-sharing host computer.

[A]. Advantages:

- It is more reliable (if one connection fails, it does not affect others)
- The center of a star network is a good place to diagnose network faults and if one computer fails whole network is not disturbed. Hub detects the fault and isolates the faulty computer.
- It is easy to replace, install or remove hosts or other devices, the problem can be easily detected-It is easier to modify or add a new computer without disturbing the rest of the network by simply running a new line from the computer to the central location and plugging it to the hub.
- Use of multiple cable types in a same network with a hub.
- It has good performance

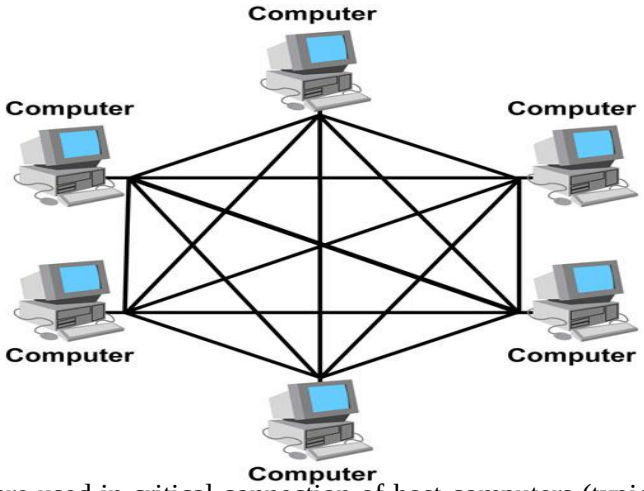
[B].Disadvantages

- It is expensive to install as it requires more cable, it costs more to cable a star network because all network cables must be pulled to one central point, requiring more cable length than other networking topologies.
- Central node dependency, if central hub fails, the whole network fails to operate.
- Many star networks require a device at the central point to rebroadcast or switch the network traffic.

IV. Mesh Topology

Devices are connected with many redundant interconnections between network nodes. In a well-connected topology, every node has a connection to every other node in the network. The cable requirements are high, but there are redundant paths built in.

Failure in one of the computers does not cause the network to break down, as they have alternative paths to other computers.



Mesh topologies are used in critical connection of host computers (typically telephone exchanges). Alternate paths allow each computer to balance the load to other computer systems in the network by using more than one of the connection paths available.

A fully connected mesh network therefore has no (n-1) /2 physical channels to link n devices. To accommodate these, every device on the network must have (n-1) input/output ports.

[A]. Advantages

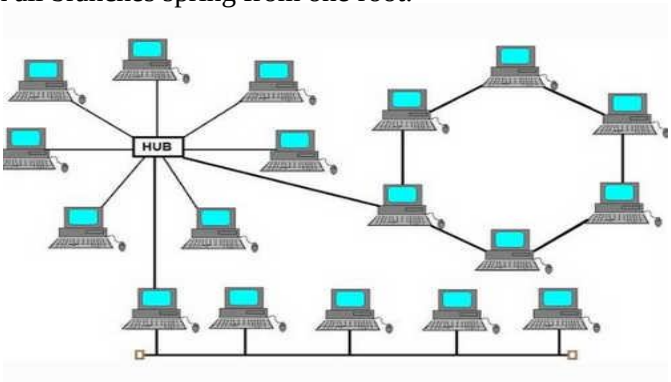
- Yield the greatest amount of redundancy in the event that one of the nodes fails where network traffic can be redirected to another node.
- Point-to-point link makes fault isolation easy.
- Privacy between computers is maintained as messages travel along dedicated path.
- Network problems are easier to diagnose.

[B].Disadvantages

- The amount of cabling required is high.
- A large number of I/O (input/output) ports are required.

VI. Tree Topology

The most common structure or topology known as Tree topology, Tree topology is a LAN topology in which only one route exists between any two nodes on the network. The pattern of connection resembles a tree in which all branches spring from one root.



Tree topology is a hybrid topology, it is similar to the star topology but the nodes are connected to the secondary hub, which in turn is connected to the central hub. In this topology group of star-configured networks are connected to a linear bus backbone.

[A]. Advantages

- Installation and configuration of network are easy.
- The addition of the secondary hub allows more devices to be attached to the central hub.

- Less expensive when compared to mesh topology.
- Faults in the network can be detected traces.

[B].Disadvantages

- Failure in the central hub brings the entire network to a halt.
- More cabling is required when compared to the bus topology because each node is connected to the central hub.

VII. Conclusion

In this paper we have to study the different types of the topologies like Bus Topology, Ring Topology, Star Topology, Mesh Topology and Tree Topology.

In this paper we have considered above five topology uses and its merits and demerits that will study will help to know that which structure or topology is best for which organization or business. We have to study the topology and finally we have to find the fact that all topologies are alternate options for business like that Bus Topology is use full for small network but its some demerits so its alternate option is Ring Topology. So finally, we can say that all topologies have some extra and different feature are available from other topology and that features are making it special from other topology.

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RECENT TRENDS AND CHALLENGES OF E-COMMERCE IN INDIA

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Abstract
Today the internet and E-commerce are daily routine in our life. It is no longer a device to be used only by highly wealthy and technologically advanced people. With rising use of internet and Smartphone, e-commerce has witnessed a strong growth in India in the past and the total size has jumped from US $ 2.9 billion in 2013 to US $16 billion in 2015 at a compounded annual growth rate of 34%. It is the India's fastest growing market; it will touch 36.7 billion by 2020. Effective implementation of government's fastest growing programs such as digital India, Make in India, Skill development will help to overcome challenges related to ineffective rural interest penetration & lack of skilled manpower. GST may enhance the growth of e-commerce. Evolution of new payment solution will also ease the transaction. Rural India has also accepted the new development of e-commerce, but it will take some time to become habitual. For country such as India, one of the most important benefits of e-commerce is its potential to help a developing rural community to leap-frog into the knowledge paradigm.

I Introduction :-

Modern electronic commerce typically uses the World Wide Web for at least one part of the transactions life cycle, although it may also use other technologies such as e- mail. Before 40 years the commerce concept created very important aspect in its area and turned in to E-Commerce, which is the buying & selling of goods & services through the Internet. Over the last ten years, the way of buying & selling goods & services has been changed by the internet. E-commerce is transforming the shopping experience of Indian Customers. The introduction of electronic data inter change spreads into producer, retailers, stock market operation & travel reservation etc. which resulted in a higher growth of the economy. In few foreign countries it is a regular process for the seller & buyer, and today more than 85% of the customer is buying products on a daily basis, like online bill, online shopping, payment of purchasing from an e-retailer etc. also known as business to consumer e-commerce (B2C). Another form of e-commerce involves transaction from one consumer to another and is known as consumer to consumer e-commerce (C2C) such as eBay, OLX, Quicker, Flipchart etc. Business to Business (B2B) refers to situation in which one business make a transaction with other.

There were only 21 million active internet users in 2006, which rose to about 354 million by June 2015. However the penetration of e-commerce is low as compared to markets like the USA, France & the UK, but is growing at much faster rate, adding around 6 million new entrants every month. According to study conducted by the Internet & Mobile Association of India the e-commerce sector is estimated to reach Rs.2, 11,005 crorer by December 2016. The Association also states that the Indian online retail market is expected to grow at the rate of 52%. Electronics & Apparel are the biggest categories in terms of sales. By 2020, India is expected to generate $100 billion online retail revenue Online apparel sales set to grow four times in coming years.

II. Objectives of study –

1) To study the role of e-commerce in India over the past few years.
2) To study the recent trends of e-commerce in India.
3) To study the challenges of e-commerce for the Indian economy.

III Research Methodology –

The research paper is based on the secondary data collected from various magazines, articles, news paper, various websites & books on the various aspects of recent trends of e-commerce in India & its challenges for the Indian economy.

IV. Internet Users –

In 2006, there were only 21 million active internet users, which rose to more than 100 million internet users in the year 2010 & this value reached 121 million users by the end of 2011. IAMAI report says that over all internet penetration in India is currently around 31%. The number of internet user in India is expected to 450-465 million by June 2017, up 4.8% from 432 million in December 2016. Urban India with an estimated population of 444 million already has 269 million (60%) using the Internet. Rural India with an estimated population of 906 million as per 2011census has only 163 million (17%) internet users. Thus, there are potential approximately 750 million users still in rural India who are yet to become internet users if only they can be reached out properly.

V. Recent trends in E-Commerce-

- Now day's large number of shopping use smart phones tables & other mobile devices are the main tool for accessing internet or browsing E-commerce company websites for their convenience.
- Social commerce is a subject of e-commerce that involves social media & online buying & Selling of products & services.
- Video based marketing is unavoidable in our shopping experience, it will increase sales by better helping people perceive their choice.
- New technologies like facial recognition, virtual fitting rooms, etc. plays most import role in current e-commerce system.
- Promotion of products, recruitment through social media, the pattern of advertisement by corporate sector etc. are made online.
- Various innovative models are being tested and launched in the market.
- Increasing trust in E-commerce companies.
- There are customer's delightment due to fast delivery, easy payment & easy returned policy.

VI. Growth of E-Commerce in India

India's e-commerce Sector tripled or rather grew by 209 percent over a period of five years – from 4.4 billion U.S Dollars (Rs.20,020 crore) in 2010 to 13.6 billion U.S Dollars in 2014. According to an Associated Chambers of Commerce & Industry of India (Assoc ham) report which was released in January 2016, it is estimated that India's e-commerce market will reach38 billion U.S Dollars. The percentage of Indians who use the internet is low-19 percent in 2014, as compared to Australia (90 percent), the US (87 percent), Japan (86 percent), Brazil (53 percent) and China (46 percent). According to a Mint report, in 2014, only 18 of 100 Indians used the internet, against 49.3 for China and 48.3 for Vietnam. Poorer countries such as Ghana also had greater internet penetration - 18.9 users per 100 people. However, there has been an increase in mobile internet spending from 54 percent to 64 percent from 2014 to 2015 respectively, e-commerce growth. Speed remains a major constraint despite of the rise in broadband and mobile internet users. According to an India Spend report, the average broadband speed in India is 2 mega bits per second (mbps), thus globally ranking 115. Similarly, the average mobile internet speed is 1.7 mbps which rank below Thailand, China, Hong Kong and Singapore. This year in March, the government allowed 100 percent foreign direct investment in online retail market places .i.e. electronic platforms that connect buyers and sellers. In April 2016, US retailer Amazon became the second-largest online marketplace by shipments in India, after domestic rival Flipkart, pushing former number two, Snapdeal to the third place. According to the Morgan Stanley report dated February 12, 2016; India is adding three Internet users every second and is already the second-largest Internet market globally in terms of users. It is expected that internet penetration will increase from 32% in 2015 to 59% in 2020, thus translating to a near doubling of the Internet user base. Also, it estimated that India will have almost 320 million online shoppers by 2020 compared with 50 million in 2015.

VII Challenge of e-commerce-

There are several challenges of e-commerce to be faced by the online shoppers & sellers, despite of several opportunities in the field of e-commerce..

- Due to growing competition in the e-commerce profit margin of online sellers is declining.
- Problems for Rural customers due to low internet speed.
- Scarcity of trained manpower may slow down the growth of e-commerce.
- Challenges of customer loyalty.
- There are no specific e-commerce laws. The sector is governed by the IT Act 2000.
- Online buyers prefer to make payment on cash on delivery basis. Manual cash collection is risky and expensive for the online sellers.
- Problem of language mostly in Rural areas..
- In India, Customer does not trust online marketing, as they are suspicious about the quality, price, delivery etc. Even in rural areas there are no perfect channels of distribution.
- Lack of personal interaction.
- Rapidly changing business models.
- Taxation challenges.
- Low entry barriers leading to reduced competitive advantage.

VIII. Impact of E-commerce.

E-Commerce is a growing sector in India. Just like the growth of IT industry in India through the 1990s, the 2010s will be remembered for the growth in the E-Commerce industry. In its present state the contribution of E-Commerce to GDP is around 0.2% which is expected to grow 15 times to around 2.5% by 2030. The impact is so huge that the present wave of de-monetisation could have not been thought if E-Commerce did not exist. By 2030 the contribution to GDP by E-Commerce is expected to reach to around 300 Billion Dollars which is around 20 Billion Dollars in its present state.

1. **Technology**- One of the major drivers of technology will be E-Commerce industry and vice versa. We are seeing new age technological solutions being taken up to solve the business problems to bring commerce to everyone digitally. This is seen in both B2C and B2B sector. Investment into technology sector is happening to drive growth in the E-Commerce domain.
2. **Logistics**- Logistics industry is both a bottleneck and a driver for e-commerce. For the same we see how last mile and inter-city logistics solutions have come up to digitally connect the different stakeholders across the country. The Uber model of moving passengers is implemented in some form or the other in the logistic sector. The growth of E-Commerce will drive innovation in the logistic sector to make the products available to the end user.
3. **Travel**- At the moment 70% of the contribution to E-Commerce comes from the travel sector which includes the online ticket bookings to other travel arrangements. This has made the market competitive by bringing all players on the same platform and has also given consumer more options. Travel industry will be earliest adopters to become completely digitised.
4. **Education-** The ability of E-Commerce to provide quality education to everyone is immense. India will have one of the biggest set of youth population and hence the scope for education sector to be the biggest achievers because of E-Commerce is sure.
5. **E-Retail**- The flag bearers of the E-commerce wave have been the various E-Retail commerce platforms. E-Retail sector is projected to contribute to around 3% of the total Retail sells by 2020 and is at present around 1%. This wave is seen in both B2C and C2C model and is bound to grow further.
6. **Other Industries**- The way of working in the Real Estate sector is already seeing the change because of the E-Commerce industry. This will change further with all property related transactions coming online and getting closed online as well. Banking sector is benefiting as well

with reduced operations cost of online transactions. E-Commerce in health care has brought health related solutions to the urban India and will further penetrate deep into Tier I and Tier II cities.

IX. Conclusion:-

E-commerce is emerging as an important tool to ensure inclusive growth. An Emergence of internal shipping option creates the opportunities to reach online consumers around the globe. It is important for physical retailers, especially located in metro cities to make a serious effort to upgrade themselves with new technology and constantly innovate in order to delight their customers. The concept of virtual companies is taking concrete shape and will usher into an era of boundary less world. E-commerce has the scope to lead India into an Economic superpower. On the other hand E-commerce faces some challenges also which we need to work on, like lack of cyber laws & computer education.

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CLOUD COMPUTING: SECURITY ISSUES

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Abstract
Cloud computing is an architecture for providing computing service via the internet on demand and pay per use access to a pool of shared resources namely networks, storage, servers, services and applications, without physically acquiring them. So it saves managing cost and time for organizations. Many industries, such as banking, healthcare and education are moving towards the cloud due to the efficiency of services provided by the pay-per-use pattern based on the resources such as processing power used, transactions carried out, bandwidth consumed, data transferred, or storage space occupied etc. Cloud computing is a completely internet dependent technology where client data is stored and maintain in the data center of a cloud provider like Google, Amazon, Salesforce.som and Microsoft etc.

INTRODUCTION

Cloud Computing is a distributed architecture that centralizes server resources on a scalable platform so as to provide on demand computing resources and services. Cloud service providers (CSP's) offer cloud platforms for their customers to use and create their web services, much like internet service providers offer costumers high speed broadband to access the internet. CSPs and ISPs (Internet Service Providers) both offer services. Cloud computing is a model that enables convenient, on-demand network access to a shared pool of configurable computing resources such as networks, servers, storage, applications that can be rapidly provisioned and released with minimal management effort or service provider's interaction. In general cloud providers offer three types of services i.e. Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS). There are various reasons for organizations to move towards IT solutions that include cloud computing as they are just required to pay for the resources on consumption basis. In addition, organizations can easily meet the needs of rapidly changing markets to ensure that they are always on the leading edge for their consumers.

II. CLOUD COMPUTING BUILDING BLOCKS

A. Different models of cloud computing Generally cloud services can be divided into three categories: Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS). Software-as-a-Service (SaaS): SaaS can be described as a process by which Application Service Provider (ASP) provide ISSN: 2249-9555 136 IRACST - International Journal of Computer Science and Information Technology & Security (IJCSITS) Vol. 1, No. 2, December 2011 different software applications over the Internet. This makes the customer to get rid of installing and operating the application on own computer and also eliminates the tremendous load of software maintenance; continuing operation, safeguarding and support [3]. SaaS vendor advertently takes responsibility for deploying and managing the IT infrastructure (servers, operating system software, databases, data center space, network access, power and cooling, etc) and processes (infrastructure patches/upgrades, application patches/upgrades, backups, etc.) required to run and manage the full solution. SaaS features a complete application offered as a service on demand. Examples of SaaS includes: Salesforce.com, Google Apps.

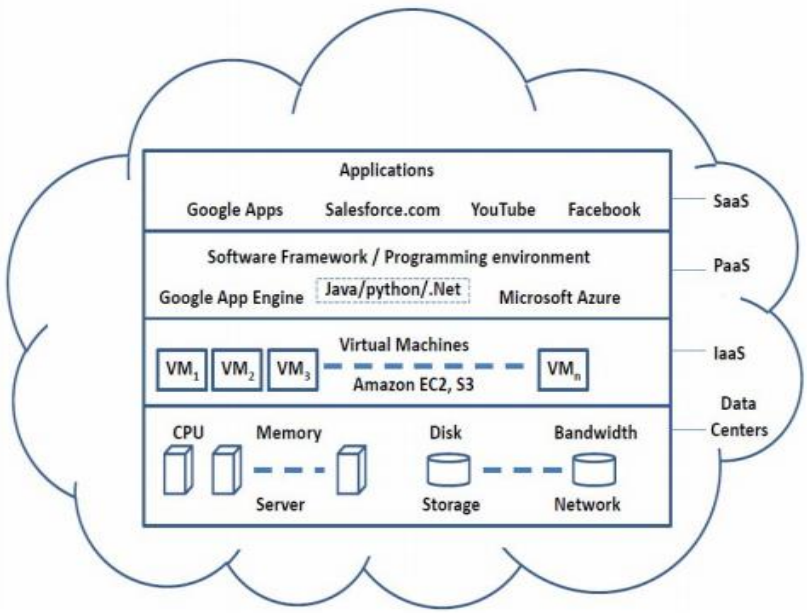

Figure 1. High Level View of Cloud Computing Architecture

A cloud environment operating according to this model may exist locally or remotely. An example of a Community Cloud includes Facebook which is showing in figure 1.

B. Cloud computing entities Cloud providers and consumers are the two main entities in the business market. But, service brokers and resellers are the two more emerging service level entities in the Cloud world. These are discussed as follows Cloud Providers: Includes Internet service providers, telecommunications companies, and large business process outsourcers that provide either the media (Internet connections) or infrastructure (hosted data centers) that enable consumers to access cloud services. Service providers may also include systems integrators that build and support data centers hosting private clouds and they offer different services (e.g., SaaS, PaaS, IaaS, and etc.) to the consumers.

I. CLOUD COMPUTING SECURITY ARCHITECTURE

Security within cloud computing is an especially worrisome issue because of the fact that the devices used to provide services do not belong to the users themselves. The users have no control of, nor any knowledge of, what could happen to their data. This is a great concern in cases when users have valuable and personal information stored in a cloud computing service. Users will not compromise their privacy so cloud computing service providers must ensure that the customers' information is safe. This, however, is becoming increasingly challenging because as security developments are made, there always seems to be someone to figure out a way to disable the security and take advantage of user information.

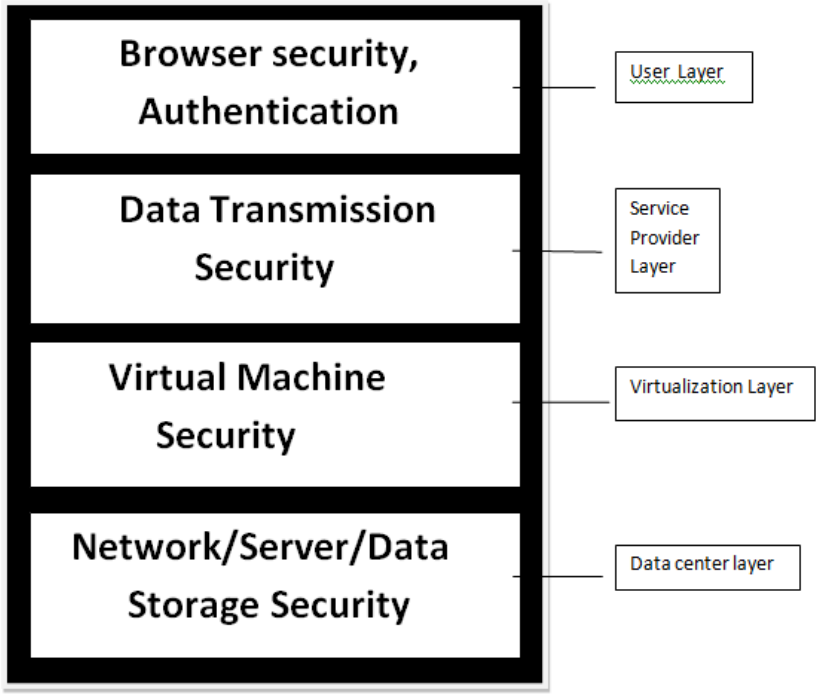

Figure 2 showing the high level view of the cloud computing security architecture.

II. KEY SECURITY ISSUES IN CLOUD COMPUTING

Cloud computing consists of applications, platforms and infrastructure segments. Each segment performs different operations and offers different products for businesses and individuals around the world. The business application includes Software as a Service (SaaS), Utility Computing, Web Services, Platform as a Service (PaaS), Managed Service Providers (MSP), Service Commerce and Internet Integration. There are numerous security issues for cloud computing as it encompasses many technologies including networks, databases, operating systems, virtualization, resource scheduling, transaction management, load balancing, concurrency control and memory management. Therefore, security issues for many of these systems and technologies are applicable to cloud computing. For example, the network that interconnects the systems in a cloud has to be secure and mapping the virtual machines to the physical machines has to be carried out securely. In some situations, customers may not want to encrypt data because there may be a case when encryption accident can destroy the data. Make sure that encryption is available at all stages, and that these encryption schemes were designed and tested by experienced professionals .

Conclusion and Feature work ISSN:

2249-9555 144 IRACST - International Journal of Computer Science and Information Technology & Security (IJCSITS) Vol. 1, No. 2, December 2011 One of the biggest security worries with the cloud computing model is the sharing of resources. Cloud service providers need to inform their customers on the level of security that they provide on their cloud. In this paper, we first discussed various models of cloud computing, security issues and research challenges in cloud computing. Data security is major issue for Cloud Computing. There are several other security challenges including security aspects of network and virtualization. This paper has highlighted all these issues of cloud computing. We believe that due to the complexity of the cloud, it will be difficult to achieve end-to-end security. New security techniques need to be developed and older security techniques needed to be radically tweaked to be able to work with the clouds architecture. As the development of cloud computing technology is still at an early stage, we hope our work will provide a better understanding of the design challenges of cloud computing, and pave the way for further research in this area.

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GRID COMPUTING AND CLOUD COMPUTING: COMPARATIVE STUDY AND CHALLENGES

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Abstract
This paper provides overview of Grid Computing and Cloud Computing conceptually, Main aim of the paper is to show similarities and difference between grid computing and cloud computing and elaborating advantages of cloud computing over just grid computing. This paper also focuses on common challenging issues for grid and cloud computing.

Introduction

This paper explores two technologies first grid computing and cloud computing. Both computing are explained with their basic ideas and concepts. Finally their common goals and challenges are discussed with similarities, differences and dependability.

GRID Computing

Definitions:

1. A computational grid is a hardware and software infrastructure that provides dependable, consistent, pervasive and inexpensive access to high-end computational capabilities.
   -Carl Kesselman, Ian Foster in "the Grid: Blueprint for a New Computing Infrastructure", 1998.
2. Grid computing is coordinated resource sharing and problem solving in dynamic, multi institutional virtual organization's"
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Explanation

Grid computing links disparate computers to from one large infrastructure, harnessing unused resources. Utility computing is paying for what you use on shared servers like you pay for a public utility(such as electricity, gas and so on). A grid is a system that:

1. Coordinates resources that are not subject to centralized control.(Otherwise, we are dealing with a local management system.)
2. Uses standard, open, general-purpose protocols and interface.(Otherwise, we are dealing with an application specific system.)
3. Used to deliver nontrivial qualities of service.(It should meet complex user demands, so that the utility of the combined system is significantly greater than that of the sum of its parts.)

Some Concepts

1. Resource are locally managed and controlled.
2. Different resources can have different policies and mechanism.
3. Computing resources managed by different batch systems & shared within grid.
4. Different storage system on different node.
5. Different policies granted to the same user on different resources on the GRID.
6. Dynamic nature: Job is scheduled in any grid.
7. Resources and users can change frequently.
8. Collaborative environments for e-communities.

Working

Grid computing requires the use of software that can divide and farm out pieces of a program as one large system image to several thousand computers. One concern about grid is that if one piece of the software on a node fails, other pieces of the software on other nodes may fail. This is alleviated if that component has a failover component on another node, but problems can still arise if components rely on other pieces of software to accomplish one or more gird computing tasks. Large system images and associated hardware to operate and maintain them can contribute to large capital and operating expenses.

Cloud Computing

To get cloud computing to work, you need three things: thin clients(or clients with a thick-thin switch),gird computing, and utility computing.

With Grid computing, you can provision computing resources as a utility that can be turned on or off. Cloud computing goes one step further with on-demand resource provisioning. This overprovisioning when used with utility pricing. It also removes the need to over-provision in order to meet the demands of millions of users.

Cloud computing evolves from gird computing and provides on-demand resource provisioning. Grid computing may or may not be in the cloud depending on what type of users are using it. If the users are systems administrators and integrators, they care how things are maintained in the cloud. They upgrade, install and virtualize servers and applications. If the users are consumers, they do not care how things are run in the system.

Common Objective

Objectives and working applications of Gird an Cloud Computing are same. Both provides following services:

1.Infrastructures as a Services (IaaS)

2. Platform as a services (PaaS)

3. Software as a service(SaaS)

Both are available in private and public forms. Following are common benefits of these technologies:

1. **Rapid Elasticity:** Elasticity is defined as the ability to scale to resources both up and down as needed. To the consumer, the cloud appears to be infinite, and the consumer can purchase as much or as little computing power as they need. This is one of the essential characteristics of cloud computing in the NIST definition.
2. **Measured Service:**In a measuredservice, aspects of the cloud service are controlled and monitored by the cloud provider. This is crucial for billing, access control, resource optimization, capacity planning and other tasks.
3. **On demand Self-Service:**The on-demand and self –service aspects of cloud computing mean that a consumer can use cloud service as needed without any human interaction with the cloud provider.
4. **Ubiquitous Network Access:** Ubiquitous network access means that the cloud providers capabilities are available over the network and can be accessed through standard mechanism by both think and thin clients.
5. **Resource Pooling:** Resource pooling allows a cloud provide to serve its consumers vi a a multitenant model. Physical and virtual resources are assigned and reassigned according to consumer demand. There is a sense of location independence in that the customer generally has no control or a knowledge over the exact location of the provided but may able to specify location at a higher level of abstraction(e.g. country, state or datacentre).

Similarities and Differences

Cloud computing and gird computing are scalable. Scalability is accomplished through load balancing of application instances separately on a variety of operating systems and connected through web services. CPU and network bandwidth is allocated and de-allocated on demand. The systems storage capacity goes up and down depending on the number of users, instances and the amount of data transferred at a given time. Both computing types involve multi-tenancy and multitask, meaning that many customers can perform different tasks, accessing a single or multiple application instances. Sharing resources among a large pool of users assists in reducing infrastructure costs and peak load capacity, Cloud and grid computing provide service-level agreements(SLAs) for guaranteed uptime availabilityof, say, 99 percent. while the storage computing in the grid is well suited for data intensive storage, it is not economically suited for storing objects as small as 1 byte. In a data grid , the amounts pf distributed data must be large for maximum benefit.

Challenging Issues to Consider

1. **Threshold Policy:** Lets suppose I had a program that did credit card validation in the cloud and we hit the crunch for the December buying season. Higher demand would be detected and more instance would be diminished and the instance of that resource would be de-allocated and put to other use.
2. **Interoperability Issues:** If a company outsources or creates applications with one cloud computing vender, the company may find it is difficult to change to another computing vender that has proprietary APIs and different formats for importing and data. This creates problems of achieving interoperability of applications between these two cloud computing venders. You may need to reformat data or change the logic in applications. Although industry cloud-computing cost is already fixed and shared among consumers.
3. **Hidden Costs:**Cloud computing does not tell you what hidden costs are. For instance, Companies cloud incur higher network charges from their service providers for storage and database applications containing terabytes of data in the cloud. This outweighs costs they cloud save on new infrastructure, training new personnel or licensing new software. In case of just grid computing cost is already fixed and shared among consumers.
4. **Unexpected Behaviour:**Lets suppose your credit card validation application works well at your company internal data centre. It is important to test the application in the cloud with a pilot study to check for unexpected behaviour. Example of test include how the application validates credit cards and how, in the scenario of the December buying crunch. It allocates resources and releases unused resources, turning them over to other work. If the tests show unexpected results of credit card validation or releasing unused resources, you will need to fix the problem before running the application in the cloud.
5. **Security Issues:** Most important problem is outage. Even though there is data recovery and service credits for this type of outage, consumers missed sales opportunities and executives were cut off from critical business information they needed during the outage. Instead of waiting for an outage to occur, consumers should do security testing on their own-checking how well a vender can recover data. The test is very simple. No tools are needed. All you have to do is to ask for old data you have stored and check how long it takes for the vendor to recover. If it takes too long to data you have stored and check how long it takes for the vendor to recover. If it takes too long to recover, ask the vender why and how much service credit you would get in different scenarios. Verify id the checksums match the original data.

An area of security testing you should do is to test a trusted algorithm to encrypt the data on your local computer and then try to access data on a remote server in the cloud using the decryption keys. You may need to address the algorithm with the vendor.

Another issue is the potential for problems with data in the cloud. To protect the data, you need to manage your own private keys. Check with the vendor on the private key management. Amazon will give you the certificate if you sign up for it.

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TO STUDY THE IMPACT OF CERTAIN EXTERNAL CONDITIONS ON SEED GERMINATION IN VIGNA UNGUICULATA (BLACK EYED PEA)

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Abstract
Aqueous extract of spinach leaves and prawns of 1%, 5%, 10% and 20 %(W/V) was treated to vigna unguiculata seeds was studied. Treated seeds show late germination, decreased rate of germination percentage, less radical length and no plumule formation. Beginning of germination delayed more by prawn extract treatment than spinach leaves extract treatment seed germination percentage is more affected by prawn extract treatment than spinach leaves extract treatment. Prawn extract treatment is more adverse in terms of radical growth during germination than spinach leaves extract treatment of seeds of Vigna unguiculata.There is no plumule formation takes place in both treated seeds during germination. The adverse effect of spinach leaves extract treatment and prawn extract goes on increasing the concentration extract.

INTRODUCTION-

Vigna unguiculata of family fabaceae commonly called as black eyed pea, chawli.

Cited fromhttp://en.wikipedia.org/wiki/vigna unguiculata, Black eye pea is the first domestication probably occurred in West Africa. But it widely grown in many countries in Asia. Black eyed peas are extremely drought tolerant, throughout the south; the black eyed pea is still a widely used ingredient in soul food and cuisines of southern United States. The crop is relatively free of pests and disease. As a legume, black eyed peas are especially good source of soluble fiber, which helps to prevent type 2 diabetes by keeping blood sugar balanced. It also binds to cholesterol.

Therefore the vigna unguiculata is selected for present study.

The germination is one of the vital processes in plant physiology, According to Raven et al (2005); seed germination depends upon internal and external conditions. In present study an attempt is made to study the certain external condition on seed germination in vigna unguiculata (Black eyed pea).Vegetable extract of spinach leaves and non vegetable extract of prawn extract are used as external factors to observe effect on seed germination of vigna unguiculata.

MATERIALS AND METHODS-

VIGNA UNGUICULATA (Black eyed pea) seeds are selected foe present study. Two sets of Petri-plates with blotting filter paper at base are taken.10 Seeds of vigna unguiculata are placed in each petridish. Adequate distilled water is applied to first Petridish as control. Treated petridishes are applied adequate quantity of 1 %(wt/volume) 5%, 10%, and 20% Treated aqueous extract of spinach leaves. The experiment is repeated as it is for second time. The observations of both experiments are considered as average.

Similarly, apply 1%, 5%, 10%, and 20% aqueous extract of dried prawns to 2 replicas of 4 petridishes with 10 seeds of black eyed pea each. The control reference kept common.

The germination of seeds is treated as one of the important criteria to study the impact of vegetable extract and non-vegetable extract on black eyed peas.

RESULT AND DISCUSSION

Table I – A Effect of Spinach leaves extract on emergence of Vigna Unguiculata

Treatment (Spinach leaves extract)	Number of seeds germination per day/s									
	1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	7th Day	8th Day	9th Day	10th Day
Control	0	5	8	8	9	9	9	9	10	10
1%	0	1	2	2	2	2	2	2	2	2
5%	0	1	7	8	8	8	8	8	8	8
10%	0	2	4	4	4	5	5	5	5	5
15%	0	1	1	1	1	1	1	1	1	1

Table I – B effect of Spinach leaves (Vegetable) extract on germination percentage seeds of Vigna Unguiculata.

Treatment (Spinach leaves extract)	Germination percentage per day/s									
	1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	7th Day	8th Day	9th Day	10th Day
Control	0	50	80	80	90	90	90	90	100	100
1%	0	10	20	20	20	20	20	20	20	20
5%	0	10	70	80	80	80	80	80	80	80
10%	0	20	40	40	40	50	50	50	50	50
15%	0	10	10	10	10	10	10	10	10	10

Table I – C Effect of Spinach leaves extract on radicle (root) length in Vigna Unguiculata.

Treatment Spinach leaves extract	Average radicle length in Cm on 10th day of treatment
Control	3.76 cm
1%	0.65 cm
5%	0.44 cm
10%	0.32 cm
15%	0.2 cm

Table I – D Effect of vegetable extract (Spinach leaves extract) on plumule (shoot) length during seed germination of Vigna Unguiculata.

Treatment Spinach leaves extract	Average plumule (shoot) length in cm on 10th day of germination
Control	1 cm
1%	0
5%	0
10%	0
15%	0

Table I-A, I-B, I-C and I-D shows germination of black eyed peas from day one to day 10 in control and spinach extract treated seed germination at 1%, 5%, 10%, and 20 % concentration, average radicle length and average plumule length on 10th day of experiment.

From Table I-A it is clear that the germination started on second day in control and 1%, 5%, 10% and 20% spinach treatment. But In 10% and 20% spinach treatment germinate rate is very slow. It means the spinach extracts treatment shows late germination. It delays the seed germination in Vigna unguiculata.

The seeds germination percentage from first day to tenth day is also seen in Table-I-B in Black eyed peas under controlled and treated conditions. It is observed that seed germination is 100% in control on 9th day of germination. In 1% spinach treatment, it is 20% germination while in 5% spinach

treatment and 10% spinach treatment it is 80% and 50% respectively on 9th day germination. The 20% spinach treated seeds of Vigna unguiculata shows 10% germination even on 9th day of germination.

It shows that rate of germination is more in control while rate of germination percentage is less in spinach leaves extract treated seeds in Vigna Unguiculata. The rate of germination percentage goes on decreasing as the concentration of spinach leaves extract treatment goes on increasing.

The Table I-B shows 100% seed germination on in control seeds of black eyed pea on Tenth day while 20%, 80%,50% and 10% seed germination rate in 10%, 5%, 10% and 20% spinach leaves extract treated seeds respectively. It means the rate of seed germination is less in spinach leaves extract treated leaves as compared to control.

From the Table I-C it is clear that average radicle length is 3.76cm. In 1% spinach leaves treated seeds it is 0.65cm, and it is 0.44 cm, 0.32cm& 0.2cm in 5%,10%, 20% spinach leaves extract treated seeds of Vigna unguiculata respectively. It is clear from these observations that average radicle length is affected due to spinach leaves extract treatment. The effect goes on increasing as the concentration of spinach leaves extract also goes on increasing.

The shoot length i.e. plumule length of control and treated seeds during germination on 10th day of treatment is shown in Table I- D. It is observed that the plumule formation is only seen in control seeds of vigna unguiculata as compared to spinach leaves extract treated seeds. It means the treatment of Spinach leaves extract shows adverse effect on the plumule formation during germination in Vigna unguiculata

Table II- A Effect of Prawn extract on emergence of seeds of Vigna unguiculata.

Treatment (prawn Extract)	**Number of seeds germination per days**									
	1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	7th Day	8th Day	9th Day	10th Day
Control	0	5	8	8	9	9	9	9	10	10
1%	0	0	0	0	0	0	0	0	0	0
5%	0	1	4	4	5	6	6	6	7	7
10%	0	1	1	1	1	1	1	1	1	1
20%	0	0	0	0	0	0	0	0	0	0

The Table- II- A shows the effect of prawn extract on the seed germination in vigna unguiculata. It is seen from observation that the seeds on second day of experiment. No seed germination started on second day in 1% prawn extract treatment. In 5% extract treated seeds the seed germination started at 2nd of treatment. In 10% prawn extract treated seeds, the seed germination started is on second day of treatment. In 20% prawn extract treated seeds, the seed germination not takes place even on 10th day of germination. It means the beginning of seed germination is affected due to the treatment of prawn extract. It is further added that the delay in beginning of seed goes on decreasing as the concentration of prawn extract treatment goes on increasing.

Table- II- B Effect of prawn extract on germination percentage of seeds of Vigna Unguiculata.

Treatment (prawn Extract)	**germination percentage per days**									
	1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	7th Day	8th Day	9th Day	10th Day
Control	0	50	80	80	90	90	90	90	100	100
1%	0	0	0	0	0	0	0	0	0	0
5%	0	10	40	50	50	60	60	60	70	70
10%	0	10	10	10	10	10	10	10	10	10
20%	0	0	0	0	0	0	0	0	0	0

Table- II- B shows the effect of percentage on concentration of prawn extract of seed germination Vigna Unguiculata. From these observations, it is clear that the seed percentage goes on increasing from first to tenth day of germination in control seeds. It is 100% rate of germination of 9th

day of treatment. The rate of germination is only 70% in 5% prawn extract treated seeds on 10th day. It is only 10% rate of seed germination in 10% prawn extract treated seeds on 10th day of experiment. However, in 1%& in 20% prawn extract treatment, the seed germination rate is nil even on 10th day of experiment. It means the rate of seed germination is affected by prawn extract treatment in VignaUnguiculata. The effect goes on adverse as the concentration of prawn extract goes on increasing. There is no germinations percentage at all in Vigna Unguiculata.

Table II- C Effected of prawn extract on radicle (root) length in Vigna Unguiculata.

Treatment Prawn Extract	**Average radicle (root) length in cm on 10th day of Treatment**
Control	4.83 cm
1%	0.4 cm
5%	0.3 cm
10%	0.2 cm
15%	0

Table II-C shows the average radicle length of seeds in Vigna unguiculata on 10th day of germination in control and prawn extract treated seeds. It is clear from table II-C that the average root length (radicle) is 4.83cm in control seeds as on 10th day of germination.

It is 0.4cm, 0.3 cm and 0.23 cm in 1%, 5% and 10% prawn extract treated seeds while there is no radicle formation in 20% prawn extract seeds. It indicates that the prawn extract treatment has adverse effect on radicle length is seeds of Vigna unguiculata. The adverse effect of prawn extract treatment goes on increasing as the concentration of prawn extract treatment goes on increase from 1% to 20%

Table II –D- Effect of prawn extract on plumule (shoot) length during seed germination of Vigna unguiculata.

Treatment Prawn Extract	**Average radicle (shoot) length in cm on 10th day of Treatment**
Control	2.07cm
1%	0 cm
5%	0 cm
10%	0 cm
15%	0 cm

Table II- D shows effect of prawn extract treatment on plumule (shoot) formation in seeds of Vigna unguiculata. It is clear from Table II-D that the length of plumule is 2.07 cm in control seeds. There is no plumule formation in 1%, 5%, 10% and 20% prawn extract treated seeds. It means there is inhibiting effect of prawn extract treatment on plumule formation in seeds of vigna unguiculata when observation of Table I-A and Table II-Aare compared it is found that seed germination begin on 2nd day in control of vigna unguiculata.The 1% Spinach leaves extract treated seed shows beginning of germination on 2nd day while 1% prawn extract treated seed shows no germination beginning on 2nd day. The 1%,5%,10%and 20% spinach leaves extract treated seeds shows beginning of germination on 2nd day of treatment However, in 1%,5%10%and 20% prawn extract treated seed of vigna unguiculata shows beginning of germination on 0 day,2nd day, 2nd day and no germination respectively. It means beginning of germination delayed more by prawn extract treatment than the spinach leaves extract treatment on seeds of vigna unguiculata.

Comparative account of Table I-B and Table-II-B shows that germination percentage of control seeds of vigna unguiculata is about 100% on 10th day of treatment. While it is 0%, 70%, 10% and 0%, in 1%, 5%, 10%, and 20% prawn extract treated seeds. It means seed germination percentage is more affected by prawn extract treatment than spinach leaves extract treatment.

From Table I-C and Table II-C, it is observed that the redicle length is maximum(3.76) in control seeds of vigna unguiculata .The length of radicle is 0.65cm,0.44cm,0.32cm and 0.2cm in 1%,5%,10% and 20% spinach leaves extract treated seeds during germination on 10th day of treatment. The length of radicle is 4.83cm in control seeds of vigna unguiculata and it is 0.4 cm, 0.3cm, 0.2cm and

0cm in 1%, 5%, 10% and 20% prawn extract treated seeds during germination on 10^{th} day of treatment. Prawn extract treatment is more adverse in terms of radicle growth during germination than spinach leaves extract in seeds of vigna unguiculata.

Table I-D and Table II-D comparative account shows that shoot formation in control, however, there is no shoot (plumule) formation in either spinach leaves extract seeds or prawn extract treated seeds of vigna unguiculata .

It means either spinach leaves extract treatment or prawn extract treatment affect the plumule (shoot) formation.

*Analia perello, Martin Gruhlke and slusarenko (2013) published a research paper. In this paper the effect of garlic extract on seed germination of wheat seed. This study confirm that natural mycoflora present in wheat grain was capable of causing poor seed germination and was capable of negatively influencing seeding growth. When treatment with Garlic juice containing allicin. It results in reduction of infection. Seeds treated with garlic juice had a relatively better germination percentage.

*In May 2005, Plant ecology Laboratory of the Department of Crop Botany, Bangladesh, Investigate the effects of water soluble extract from different parts of Banana plant on seed germination and seeding growth of some vegetable crops. The test crops were lettuce, radish, cucumber, ribbed gourd, bean and okra.

Among the extracts from different parts of banana plant, extract from rhizome showed strongest inhibition on the seed germination and seeding growth of the test crop. The test plant species responded differently to the rhizome extract and lettuce seedling was found most sensitive.

*Ziaebrahimi L, et.al.pak J Biol Sci 2007

In this, research paper showed that effect of water extracts of eucalyptus leaves examined on germination and growth of three wheat cultivar seeds and seedlings. Results showed that germination percentage strongly decreased leaf and root lengths also affected and dry and wet weights of both roots and shoots showed similar change patterns. Activity of polyphenoloxidases increased only in one of three cultivars and again roots showed more activity of this enzyme is response to eucalyptus extract.

*Licx, et al.J Environ sci (china). 2007

The effect of Arsenic(AS) were investigated on seed germination, root and shoot length and their biomass and some other factors to elucidate the toxicity of As. The results indicated as could exert harmfulness in the early development stage of wheat at inappropriate concentrations.

*An J, et al.chemosphere.2009.

Biochemical responses of wheat(Triticum aestivum) seedling stressed by two typical personal care products- Triclosan (TCS) and galaxolide(HHCB).The results showed that wheat shoot and root elongation was significantly inhibited by 50-250 mg L(-1) TCS and HHCB. Wheat roots were sensitive TCS, while shoots were sensitive to HHCB.

E.A.Grant, W.G.Sallans

June 1964, contribution No.129, Reaserch station Canada

Seeds of four legumes and four grasses were germinated in the presence of aqueous extracts of the same species, using distilled water as a check. Based on the number of significant reaction to the extracts, the species may be classified in the following order of decreasing inhibition-Alfalfa and timothy were the species least affected by the extracts while reed canary grass was the most susceptible. With the exception of alfalfa, extracts of aerial portions of the plants had greater inhibitory effects than root extracts.

*Effect of scialert.net.Allelopathic Effects of

Asian Journal of plant Sciences

Izzet Kadioglu and Yusuf Yanar

Volume 3(4):472-475, 2004

This study examined the effects of extracts of plants, mostly weeds. Also, chemical compounds in extracts having significant positive or negative allelopathic effects on other plants, should be studied in detail for their specific effects on plant growth.

*S.Roy,M.Asaduzzaman, M.H.R.Pramanik and A.K.M.A.Prodhan(2006)

In this paper the effect of Banana plant extracts revealed a significant inhibition on seed germination and seedling growth of lettuce and the degree of inhibition increases with the increase of extract concentration.

Rhizome extract strongly delayed and inhibited the germination of lettuce.

*M.S.A.Mamun and M.Shahjahan (2011) Agril.Res.36 (4):733-739-

An experiment was conducted to determine the effect of some indigenous plant extracts on the germination of wheat seeds. This study showed that the seeds treated with plant materials did not adversely affect the seed germination.

*M. A. I. Talukdar.M.Rahaman, B.Roy and K.C.Saha.

In this paper the effect of aqueous extracts of different herbal plant leaves on the germination of selected vegetables are studied. A significant effect of aqueous extracts was found on the germination of vegetables throughout the growing period. In Turnip and Ladies finger it found to be maximum.

*According to Chang Naihang (1996), the effect of vermicompost on seed germination.

The effect of vermicompost of Salvinia, Eichhornia, Chromolaena and Parthenium on percentage of seed germination, shoot and root length and wet and dry weight of wheat are measured. Regarding that it has concluded that, the lower concentration of vermicompost extract enhances the root length, shoot length, number of roots and wet and dry weights of seedlings in all the wheat seeds tested.

*Alice D.Rao A.V.1986.Antifungal effects of plant extract on Drechslera oryzae in rice.Int.Rice Res.Newsl.12 (2):28.

In this research, the percent reduction in seed borne infection of target pathogenic fungi recorded in mungbean seeds were treated with five different treatments. All treatments were found to significantly reduce theoccurences of seed borne fungi but did not completely control them. Plant extracts have played a significant role in the inhibition of seed borne pathogens such as fusarium oxysporum and in the improvement of seed quality and emergence of seed embryo.

*Eckhard Koch, Steven J.Roberts (2014) JKI, Institute for biological control, Darmstadt, Germany.

The paper gives an overview of approaches that have been taken to utilize the non-chemical methods for control of important seed borne pathogens of vegetables and small grain cereals. The treated plants include bacterial fungal diseases and viral diseases, which can be controlled in seeds.

Rishi P. Singh, K. Raja Reddy, in Advances in Agronomy, 2015.

This research shows the treatment technology in which it revealed that by using specific products and specific techniques can improve the growth environment for the seed, seedling and young plant. The seed is dressed with either a dry formulation of the seed treatment chemicals

*Md. Zahangir Alam, Islam Hamim, MA Ali, M. Ashrafuzzaman, Bangladesh Agricultural University (BAU) (2014).

The result of the present investigation showed that, seed treatment with different physical, chemicals, biological and botanical agents especially Biofungicide, allamonda leaf extracts, neem leaf extracts and Chitosan solution is useful to prevent germination failure to produce healthy, disease free and morphologically strong seedling and to promote production of vigorous seedling.

Similarly, an attempt is made to study the impact of certain external conditions on seed germination of vigna unguiculata.

CONCLUSION-

Aqueous extract of spinach leaves and prawns of 1%,5%,10% and 20%(w/v) was treated to Vigna unguiculata seeds was studied. Treated seeds show late germination, decreased rate of germination percentage, less radicle length and no plumule formation. Beginning of germination

delayed more by prawn extract treatment than spinach leaves extract treatment. . Seed germination percentage is more affected by prawn extract treatment than spinach leaves extract treatment. Prawn extract treatment is more adverse in terms of radicle growth during germination than spinach leaves extract treatment to seeds of vigna unguiculata. There is no plumule formation takes place in both treated seeds during germination. The adverse effect of spinach leaves extract treatment and prawn extract goes on increasing with increasing the concentration extracts.

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INFLUENCE OF VARIOUS EXTRACT ON GERMINATION PROCESS IN MATKI CHAULI (MAT BEANS)

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Abstract
*To study the seed germination of Mat bean (Vigna aconitifolia**)** under the aqueous extract of plant and animal origin of 1%, 5%, 10% and 20% Concentration are used. The germination of seeds per day percentage of germination, average radical length and average plumule length in cm are parameters under study. The germination is more in control than treated seeds. Either plant extract or animal extract treatment is non stimulating and harmful to germination process in general. The effect of animal extract is very harmful than the plant extract treatment. Seed germination percentage is more in control than treatment. The seed germination percentage is more affected in aqueous extract of animal origin than plant origin. In both the treatment as the concentration increases the maximum adverse effect is seen at 20% concentration of aqueous extract of animal origin average radical length is affected due to the treatment. The treatment of aqueous extract of prawn is more is destructive than the aqueous extract of spinach. There is adverse effect of aqueous extract of plant origin (spinach) and prawn on average plumule growth of Mat bean seeds. Amongst the both treatment, aqueous extract of plant origin (spinach) shows less harmful..*

Introduction-

Mat bean belonging to family fabaceae. Moth bean (Vigna aconitifolia L.) is an exceptionally hardy legume that thrives in South Asia in hot, dry, tropical conditions. It is annual plant. Yellow flowers develop into a brown pod 2.5 to 5 cm in length, which holds 4 to 9 seeds inside[1]. The rectangular seeds exist in a variety of colours including, yellow-brown, whitish green and mottled with black[2].

Mat beans seed are having great nutritional values. Mat beans contain carbohydrates, protein, fat, and vitamin. Also contain Vitamins A, Vit B6, Vit C, Vitamin k, Phosphorous, Magnesium, Copper, Iron, Zinc and Carbohydrates and Fat [3]. The seeds of these pods contain approximately 22–24% protein [4].

Mat beans different food products such as dhal (i.e. thick stews from dehulled and split grains), sweets, snacks and savory foods have evolved and became popular in the Indian subcontinent [5,6].

For vegetarians, it is a good protein and calcium source. It also offers fibre, vitamins and minerals. Whole or split moth bean seeds can be cooked or fried. In India, particularly in the state of Maharashtra, moth beans are sprouted before cooking and used for making Usal (spicy stew).

They can be used for breakfast or other meals.The usal is essential part of the popular dish Misal Pav [7,8] Fried splits make up a ready-to-eat traditional namkeen, or savory dry snack, in India called dalmoth [8] and can be used to make traditional dal. The moth bean pods can be boiled and eaten, and seeds can be ground into flour that is used for another traditional namkeen called bhujia. It is believed that consumption of the seeds can help treat a fever.

Mat bean seeds are having great medicinal value; Calcium is one of the many nutrients found in moth beans. As everyone knows, the said mineral is important for making the bones stronger and preventing osteoporosis from striking. There is also phosphorous in moth beans, which is another nutrient vital for strengthening the bones, experts say. With the remarkable number of nutrients found in moth beans, it’s no wonder why their consumption can help make your body more defended against

disease-causing bacteria, viruses and even fungi. Moth beans help save you from ending up constipated. It's for the fact that fiber is one of the many nutrients they have

According to Devadas et al., 1977 Oligosaccharides, such as raffinose, stachyose and verbascose are associated with intestinal gas (flatus) production after consumption of beans. Flatulence is caused by such oligosaccharides that escape digestion and are fermented by the intestinal microfloras[9,10]

However, there are no scientific studies on the influence of aqueous extract of plant origine and animal origin of varying concentration on seed germination in Gram seed. Miransari and Smith(2014) said that seed germination is an important process affecting crop production , and is influence by range of factors, including enzymes and hormones[11] . Seed germination is simple and nondestructive technique for measuring plant biochemical growth and development.Therefore seed germination, germination percentag, radical length and plumul length are consider for understudy .

The number of seed germinate per day, germination percentage of seed, radical length and plumule length on 10^{th} day are the parameters consider to study

The treated petri dishs (6^{th}, 7^{th}, 8^{th} and 9^{th}) with 10 seed Mat beans each treated with adequate amount of aqueous extract of prawn of 1%, 5%, 10% and 20% for 10 days to study the seed germination of Mat bean. The germinate per day, germination percentage of seed and plumule length on 10^{th} day of treatment are parameters consider for study.

The entire process repeated for next 10 days . The observation are taken as an average of both the replicas.

MATERIAL AND METHOD

Mat bean are collected placed ten each set of 9 Petri dishes'. Each Petri dish is placed with normal blotting paper at bottom. First Petri dish is treated as control. It is poured with adquate distill water daily. Next four petri dish are treated with adequate amount of aqueous extract of plant (spinach leaves) remaining four petridish are poured and treated with adequate amount of aqueous extract of animal origine (dried prawn). The contoll and treated petri dishes with 10 each Mat seed are under 10 day's observation. It was to study the seed germinaion of Gram seed under the aqueous extract of plant and animal origin.

For aqueous extract of plant origin preparation weight to volume ratio is consider for 1% aqueous extract of plant origin, 1 gm fresh spinach leaves homogenized with 100 ml distill water. The content is filter through the normal filter paper. The filtrate is used as 1% aqueous extract of plant origin, similarly 5%, 10% and 20% aqueous extract of plant origin is prepared daily freshly. Thus 1%, 5%, 10% and (w/v) concentrated aqueous extract of plant origin is prepared.

For aqueous extract of animal origin preparation, weight to volume ratio is considered for 1% aqueous extract of animal origin, 1gm of dried prawn homogenised with 100 ml distill water. The content is filter through normal filter paper. The filterate is used as 1% aqueous extract of animal origin. Similarly 5%, 10% and 20% aqueous extract of animal origine prepared daily freshly. Thus 1%, 5%, 10% and 20% (w/v) concentrated aqueous extrat of lant origin is prepared.

The treated Petri dish of Green pea treated with aqueous extract plant origin and of 1%, 5%, 10% and 20% for 10 days to observe seed germination of Mat beans.

RESULT AND DISCUSSION:-

Table 1. Number of seed germination 1day of Mat beans due to treatment of aqueous extract of plant and animal origin.

Petri dish Number	Treatment		Number of seed germination/ day.									
			Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
1	Control	1	4	7	7	7	7	7	7	8	9	10
2.	Spinach Extract	1%	4	6	6	6	6	6	7	7	7	7
3.		5%	3	4	4	4	4	6	6	6	6	6
4.		10%	4	5	6	6	6	6	6	6	6	6
5		20%	1	2	2	2	2	2	2	2	2	2
6.	Control	2	8	9	9	9	9	9	9	9	10	10
7.	Prawn Extract	1%	3	6	6	6	7	7	7	7	8	8
8.		5%	1	3	3	4	6	6	6	7	7	7
9.		10%	0	0	0	0	3	3	3	3	4	4
10.		20%	0	0	0	0	1	1	1	1	2	2

From Table-1, it is clear that the germination of seeds of Mat beans starts on first day in control. There is germination in 1% of plant extract and as well as there is germination on animal extract. Germination of seed increases on day to 10^{th} day. Maximum germination of nine seeds on 10^{th} day in control as well as 1%, 5% and 10% respectively. The 20% animal extract (prawn extract) treated seeds shows very less germination even on 10^{th} day. In 5%, 10%, 20% plant extract treated seed germination is less as compare to the control. Similarly in 5%, 10% prawn extract treated seeds the germination of seeds is less. It is almost non-significance.

From Table-1 it is clear that the number of seeds germination third to nine days in control and 1% plant extract treated seeds that 1% plant extract shows more germination than control seed. It may conclude that 1% plant extract stimulates the germination in Mat beans seed.

The overall conclusion from discussion is to draw as the germination of seed of Mat bean is more in control than treated seed. It means either plant extract treatment or animal extract treatment is non stimulating and harmful to germination process, except the 1% plant extract. The effect of animal extract is very harmful than the plant extract treatment.

Table-2. Seed germination percentage of Pisum sativum after treatment of

Petri dish Number	Treatment		Number of seed germination/ day.									
			Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
1	Control	1	40	70	70	70	70	70	70	80	90	100
2.	Spinach Extract	1%	40	60	60	60	60	60	70	70	70	70
3.		5%	30	40	40	40	40	60	60	60	60	60
4.		10 %	40	50	60	60	60	60	60	60	60	60
5		20 %	10	20	20	20	20	20	20	20	20	20
6.	Control	2	80	90	90	90	90	90	90	90	100	100
7.	Prawn Extract	1%	30	60	60	60	70	70	70	70	80	80
8.		5%	10	30	30	40	60	60	60	70	70	70
9.		10 %	00	00	00	00	30	30	30	30	40	40
10.		20 %	00	00	00	00	10	10	10	10	20	20

Seed germination percentage of Mat bean after treatment of aqueous extract of plant and animal source origin is seen in Table 2.It shows the seed germination percentage per day up to ten days of experiment for control and treated conditions from the table. It is clear that seed germination percentage maximum on 10^{th} day of treatment in control aq plant extract treated as well as animal extract treated seed in control. The seed germination percentage is 70 on 2^{nd} day. However it is interested to note that it is zero percentage in both 10%, 20%% treatment animl extract .It 90% in control while 70% and 60% in 1% and 5% plant extract treatment seeds. It seems to stimulating effect of plant extract on germination percentage. The seed germination percentage is 60% and 20% each on 10^{th} day in 10% and 20% plant extract treatment respectively. In aqueous extract of plant origin it is hardly 70%, 60%, 40% and 20% in 1% 5% 10% and 20% treatment respectively. It is to conclude that seed germination percentage is more control than treatment amongst the treatment unclear study; the seed germination percentage is more effect in aqueous extract of animal origin than plant origin. In both the treatments the concentration increases the adverse effect on seed germination increases. The maximum adverse effect is seen at 20% concentration of aqueous extract of animal origin.

Table- 3. Average radical length on 10^{th} day of treatment in Mat beans after treatment of aqueous extract of plant and animal origin.

Treatment	Concentration	Average radical length on 10^{th} day of treatment
Control	-	0.70
Aqueous extract of plant Origin (spinach extract control)	1% 5% 10% 20%	0.44 0.31 0.28 0.20
Control	-	2.94
Aqueous extract of Prawn	1% 5% 10% 20%	2.67 1.42 0.28 0.10

From Table 3, it is clear that control seeds of Mat beans shows average radical length is maximum (2.94 cm) than 0.44cm, 0.31cm, 0.28cm and 0.20cm of aqueous extract of plant origin treated seeds with 1%, 5%, 10% and 20% concentration respectively. It means the average radical length is less in plant extracts treated seeds. It is decreasing as the concentration of spinach extract goes on increasing similarly from the table. It is also seen that the average radical length 2.67cm at 1% aqueous extract of animal origin (prawn) treated seeds. It is 1.42cm, 0.28cm, 0.10cm for 5%, 10%, and 20% treated seeds respectively. Above observation are arrived at conclusion that the average radical length is affected due to the treatment with aqueous extract of spinach and prawn. The treatment of aqueous extract of plant origin is more destructive than aqueous extract of spinach.

Table-4- Average plumule length on 10^{th} day of treatment of aqueous extract of spinach and prawn.

Treatment	Concentration	Average plumulel length on 10^{th} day of treatment(cm)
Control	-	6.62
Aqueous extract of spinach	1% 5% 10% 20%	3.2 - - -
Control	-	5.56
Aqueous extract of Prawn	1% 5% 10% 20%	- - - -

Table-4. Depicts the average plumule length on 10^{th} day of treatment in control and treated seeds of Mat beans. It is noted that 6.62cm is maximum average plumule length seen in control seed. 3.2 cm is

average growth of plumule in aqueous extract of spinach treated seeds at 1 % concentration. The aqueous extract of prawn treated seeds of Mat beans are showing the average plumule length as zero for 1%, 5%, 10% and 20% means no plumule growth at all for 1%, 5%, 10% and 20% concentration of aqueous extract of prawn.This discussion conclude that there is adverse effect of aqueous extract of plant (spinach) on plumule growth of p.sativum seeds. Amongst the both treatment, aqueous extract of plant origin shows less harmful than prawn extract [11,12,13]

Alkalization and salinization of soils have become a global environmental problem. These are important factors for limiting agricultural productivity. Alkali stress has been clearly demonstrated as more severe than salt stress.[14]. When a saline soil contains HCO_3– and/or CO_3– it causes injury to plants not only through salt stress but also an alkali stress, because soil salinization and alkali-zation frequently co–occur in nature, the conditions of which are very complex.[15,16].

According to He and Cramer[17] growth analysis is fundamental to the characterization of a plant's response to environmental stress. The tolerance of seedling to salt and alkali stresses is lower than that of germinating seeds.[18] The saline–alkaline stress decreased germination rate.

A decrease in growth due to salinity has been reported by Sheoran and Gang[19]. Inhibition of seed-ling growth under saline conditions may be brought out due to number of reasons such as inhibition of cell division and cell elongation[20]. Decrease in plant height under saline conditions is a common phenomenon in mung bean.[21]

C. Beasse (2000) studied effect of epidermics of mycophaerella pinocles on crop growth radiation interception efficiency (PIE) and radiation use efficiency by dispersion on ground of pea. Which decrease the photosynthesis in leaves [22].

Dry seeds do not germinate. Water is an essential factor to trigger off the process of seed germination. Shortage of water at any stage of plant growth usually results in a reduction in vegetative growth but many annual crop plants are sensitive changes in soil moisture condition during the period from flower initiation to the development of full flower [23-25].

Heat cultivation and micronutrient coupling are two relatively methods that are used to increase the yield and size of the Gram seed. Recent research has indicated that a combination of heat treatment along with the two vital micronutrients, phosphorus and nitrogen, are the most critical components to increasing the overall yield of Cicer arietinum[23]. Unlike other food crops, the perennial Horse gram seed shows a remarkable capacity to change its nutritional content in response to heat cultivation. Treating the Horse gram seed with a constant heat source increases its protein content almost threefold [23]. Consequently, the impact of heat cultivation not only affects the protein content of the Horse gram seed itself, but the ecosystem that it supports as well. Increasing the height and size of Horse Gram seed plants involves using micronutrient fertilization with varying doses of inorganic phosphorus and nitrogen [24].

Temperature affects cellular metabolic and growth rates. Seeds from different species and even seeds from the same plant germinate over a wide range of temperatures. Seeds often have a temperature range within which they will germinate, and they will not do so above or below this range. Baskin, Carol C and Jerry M (2014) shows that variation in Seed dormancy and germination within and between Individuals and Populations of a Species[25].

Light or darkness can be an environmental trigger for germination and is a type of physiological dormancy. Most seeds are not affected by light or darkness, but many seeds, including species found in forest settings, will not germinate until an opening in the canopy allows sufficient light for growth of the seedling.

When the seed imbibes water, hydrolytic enzymes are activated which break down these stored food resources into metabolically useful chemicals.[26]. Oxygen is required by the germinating seed for metabolism.[27]. Oxygen is used in aerobic respiration, the main source of the seedling's

energy until it grows leaves [26]. Oxygen is an atmospheric gas that is found in soil pore spaces, if a seed is buried too deeply within the soil or the soil is waterlogged, the seed can be oxygen starved.

Conclusion:

To study the seed germination of Mat bean (Vigna aconitifolia**)** under the aqueous extract of plant and animal origin of 1%, 5%, 10% and 20% Concentration are used. The germination of seeds per day percentage of germination, average radical length and average plumule length in cm are parameters under study. The germination is more in control than treated seeds. Either plant extract or animal extract treatment is non stimulating and harmful to germination process in general. The effect of animal extract is very harmful than the plant extract treatment. Seed germination percentage is more in control than treatment. The seed germination percentage is more affected in aqueous extract of animal origin than plant origin. In both the treatment as the concentration increases the maximum adverse effect is seen at 20% concentration of aqueous extract of animal origin average radical length is affected due to the treatment. The treatment of aqueous extract of prawn is more is destructive than the aqueous extract of spinach. There is adverse effect of aqueous extract of plant origin (spinach) and prawn on average plumule growth of Mat bean seeds. Amongst the both treatment, aqueous extract of plant origin (spinach) shows less harmful.

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A STUDY OF CHANGING RESEARCH PARADIGMS IN THE HUMAN RESOURCE MANAGEMENT

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Abstract

The recent dynamic changes in the technology, competition and other environmental changes has multidimensional effect on every sector of economy. In respect of specific industrial unit they have affected Production, finance, marketing and also HR activities. It is a time to review and analyze the impact of such factors on Human Resource Management and search the new paradigms for research. The HR Department performs several practices to train, motivate, stimulate, develop and retain the quality human resources. The research examined and evaluated the changing nature of Human Resource Management (HRM) in Indian Industries. The research revealed that the different environmental dimensions have direct and indirect effects on employer and employee relations. The research suggests that the HR Department should initiate necessary steps to rectify the existing HR Strategies suitable to the satisfaction of employees,organization and changing environment.. The paper ended with a discussion on implications and limitations of the research and scope for future studies.

Keywords: *Human Resource Management, Globalisation, e-HRM.*

Introduction:

In the last decade, the strategies of Human Resource Management(HRM) was changed from organizational goal to employees career development. Thus, the organsational culture has been changed from mere organizational development to employees welfare and subsequently their development in respect of career. In return, the employees work in the overall development and progress of organization. In the present era employees remain loyal towards the organization , if the opportunities of skill and career development are explored to them. The organizations have to design policies and programs in HRM to develop people and their potential for growth. Earlier, the personnel department was concerned with the traditional functions such as to attract, recruit, train, assess, promote and compensate the employees. But, the present HRM has gone to radical changes as employment is moving towards task oriented contractual basis. The traditional approach is changed to strategic and dynamic approach. By 1990 onwards ,the process of Globalisation compelled the business organizations to under go drastic changes in its policy, structure , management practices and so on. In recent period, the emergence of knowledge economy has given priority to talented and skill oriented workers and managers. To accommodate innovations and also to manage such paradigm changes, organisations need to become more flexible, dynamic and responsive .In respect of HR the oranisations have to plan and prepare a programme in three ways viz. career development , creating leaders and providing good leadership. It is a time to revaluate and assess the HRM in recent days of globalization, deregulisation ,changing expectations of consumers, digitization , robotisation and dynamic technological changes. The research paradigms in HRM are required to change accordingly so as to retain quality of H-factor (Human Factor) ass it is today in organizational structure.

Literature Review:

No doubt that the human factor shall not loose its importance in the organizational set up though there is outburst of technology and dynamic environment. The need to utilize human brain will remain in spite of replacing human work by robots.

In a book Globalizing Human Resource Management by Paul Sparrow, Chirs Brewster and Hillary Harries (2004) have explained the HRM concept in the different perspective by dividing it in to nine chapters. They have written on the complex issues which are faced by most HR professionals in present days. The book begins with defining what is meant by globalization and examining the debate surrounding its impact. This book contains data based on survey and a model of the processes involved in globalizing HRM. There is analysis of effect that technology is having on the delivery of HR

services on a global basis through shared service models, e-enablement of HR and a series of other technical developments. The book also contains the overall impact of technology and automation on traditional HR activities.

Helena D. Cooper-Thomas and Neil Anderson (2006) The aim of this paper is to highlight organizational socialization (OS) research, to present a new model of OS and to draw from both of these to suggest practical steps for both organizations aiming to socialize newcomers. In this paper testable relationships are proposed between these indicators and both five learning domains and five learning sources. The research model has not been tested empirically. Further, the fifth success indicator, external representation, is a new and untested concept in the OS literature. The paper provides a model that managers and newcomers may find useful to successfully negotiate the OS process. Further, the third section of the manuscript extensively discusses practical implications from the model and more broadly from the initial literature review. The model proposed is novel and raises the important issue of appropriate OS success indicators. New propositions are made regarding relationships between learning sources and domains with these success indicators. This testable model is a valuable resource for researchers. Further, for managers, whether newcomers themselves or responsible for newcomers, the model provides a framework for considering what they are aiming to achieve and how they might get there.

Joe Duke II & Ekpo Nya Udono (2012) states and identifies the identifies the number of approaches and practices that are designed to help organizations wrestle with new work-place realities, the impact of globalization and international competition. They also provide the measures to replace the traditional human resource management practices, which are increasingly becoming inadequate. The measures are mainly focused on promoting new work-place cultures, organizational language, multi-skilling and customer focus. The researchers however conclude that a number of tested and established human resource management practices need to be combined with the new paradigm in order to achieve significant productivity improvements that can lead to widespread superior corporate performance. The study also suggests further scope of research in order to establish the effective HRM system to utilize human factors in changing environment .

Research Gap:

The changing environmental factor will compel the organizations to bring necessary changes in their HRM System an important and core area of the Organisation. HRM shall have multidimensional effect on every component of organization such as marketing, production, finance and so on. In this respect, there are several areas of HR practices where in detailed study is required to explore means and measures to adjust with dynamic environment. Thus, the objectives of HRM can be achieved. On referring several books and papers especially on HRM with reference to global changes, it is understood that there is a wide scope for research in HRM.

Objectives of the Study:

1. To know the need of advanced research in Human Resource management
2. To assess the efforts and Contribution of researchers in the context of Changing Environment.
3. To analyze the Factors which will influence the HRM in the coming years.
4. To identify the limitations and Hurdles in the Path of HRM.
5. To offer useful Suggestions in the light of Findings

Research Methodology:

This paper is basically descriptive and analytical in nature. In this paper an attempt has been taken to analyze changing research paradigms in the field of HRM. The data used in it is purely from secondary sources according to the need of this study and need based primary information through self experience and experts from the field of HRM.

Changing Need and Importance of HRM :

In recent period we are sensing the several changes in every sector in the world. The changing nature of competition ,globalization, increasing competition, mergers, acquisitions, restructuring ,technology etc. have forced the business units to initiate time to time redesigning their activities. In this dynamic environmental changes the HR department has a momentous role. Though, the organisastion goes for automation the HR shall have changing role as:

1. ***HR Department Creates Leaders and Provide Leadership***:

HR Department creates best leaders who will develop leadership qualities in their subordinates. In creating leaders the attempts are made to change the attitude, aptitude, social approach and network of the leader. There is a striking difference between leader and leadership. A good leader is that who provides good leadership.HRM is needed to provide system oriented,process driven and effectively communicative leadership at different level.HR department gives emphasis on leadership, and the leader has to be role model and self example. It grooms the potentials in the managers to reach at top positions.

2. ***HR creates Organisational Culture*** :

HR Department provides perfect harmonised relation among all levels of management, based on ethics, transparency, friendliness, clarity in communication, and best societal relations, which shall reflect on the organisational culture. A well cultured organization can endow with innovative HR policy to provide the extra mile so that the enterprise attracts the best talents and retains them.

3. Contractual Employment:

In recent days HRM role is not limited to recruitment , training, promotion and record keeping, it has vital for HR professionals must understand that the nature of employment is gradually moving towards contractual, task-based and time-frame-driven.HRM has a significant role to inter and intra placement of such employees to maintain image of organisation.

4. ***Shifting of Loyalty***:

In traditional management the business units were second home for managers and employees and only a sense of job opportunity was inspiring them to remain loyal towards organization. In last decade the loyalty of the people in the organization shifted from mere job opportunity to career development. A quality human resource will be retained in the organization if they see some future career opportunities. In this phase the HRM has a strategic role to retain them.

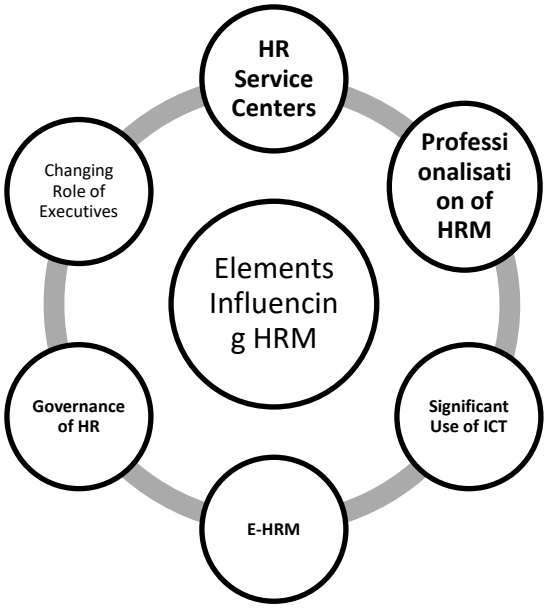
5. High Attrition Rate and Industry Collaboration:

Retention of Human Resource is a challenge before every organization. In these days the mainly IT companies have collaboration along with NASSCOM (The National Association of Software and Services Companies) to backlist and stop therecruitment of such employees for a particular period of time, in order to moderate attrition rates.HR department plays a vital role in framing such strategies in the interest of industry.

Elements Influencing HRM And Exploring Research Opportunities:

In order to place HRM to cope up with and overcome the challenges posed by new dynamic environment and development, it is developing in respect of content,approach,outlook and context. A number of human resource practices indicate a new paradigm in the management of people in organizations.The most important and having immediate implications on HRM are shown in the Figure -1 mentioned below.These changing paradigms will definitely explore the further scope of research in HRM.

Figure -1 : Elements Influence HRM



1. HR Service Centers :

The HR department has to perform a dual role as 1.Strategic Role 2. Operational Role.In strategic role it perform the range of activities from HR planning,HR retention and attraction and HR utilization in the interest of orgaisation. Operational role is routine in nature such as resolving individual problems, quarries etc. Now a days HR Service Centers -a group of HR professionals are handling such issues on behalf of management. Thus, the HR Departments can concentrate on strategic activities more.

2. Professionalization of HRM:

Professional approach is scientific and more realistic approach ,which can be used in different areas of activities. Since the approach of the people towrds the orgaisation has shifted from traditional-emotional and personal to more career oriented-professional. The HRM policies, procedures and strategies are required to be changed in the organization.

3. Significant Use of ICTs:

In different domains in the organization a data analysis is in very high demand .Use of ICTs (Information and Communication Technology).This facilitates knowledge sharing and adding experience. Human Resource Management plays a remarkable role in supporting continuous innovation and new ICTs can enable this process. It is a responsibility of every HR Department to create our own authentic, reliable HRIS (Human Resource Information System) to enable fruitful decision making.

4. E-HRM :

Use of electronic means such as Intranet, Extranet and Internet and soft wares such as ERP (Enterprise Resource Planning),Bio-red,SAP (Sysytem Approach and Product) and HR pay Roll System improves the HRM performance in respect of training ,development, record keeping ,data gathering & analyzing and also reducing bias.In this changing paradigm there is a ample scope in research to introduce E-HRM,E-training,e-recruitment,e-selection ,e-job analysis ,e-HR records and e-aapraisal.

5. Governance of HR

In these days the employees are more career oriented and would like to explore opportunities within the organization for their future development. Hence, the HR Governance matters managing of HR Factors. Along with careers the people in the organization expects not only compensations but also other perks and facilities such as health care, retirement, training, and other human capital investments. Goverance of HR motivates the managers and employees in return the HR risk can be minimized by organization. Thus, this is another broad area which provides scope for research.

6. Changing Role of Executives :

No executive has remained boss in this changing environment. In coming days the boss and subordinate relations shall be no more.It may not be required to please the boss rather the boss has to maintain close relationship with employees. In this shifting of concepts the HRM has to play a key role .The executives have to provide leadership in talent management, development and serving the organizational objectives.

Hindrances in the Path HRM:

The hurdles observed in the Human Resource Management process are:

1. Difficulties in adaptation of Innovations ,which is dynamic.
2. Especially small size companies may struggle to provide big compensation.
3. Difficulties in making available a good traines to provide training to the employees.
4. Possibility of no dedicated involvement of mangers and employees as they are career oriented.
5. Difficulties in recruitment and retention of talented employees.employees.

Discussion and Conclusion:

The recent changes in the orgnisation due to globalization and other factors , the HRM put forth the challenges before policy makers to identify importance of quality human resources. There is a key role of HR department to recruit ,select,train and retain skillful eemployees. The experts form HR department and executives should make purposeful attempt to rationalize HRM system. A study of changing research paradigms in HRM reveals that:

1. Empirical Research is required from the point of view of HRM perspective
2. Instead of deciding HRM policies centrally, the participation of managers and employees are required to be initiated.
3. Instead of traditional approach in utilizing human potentials ,the professional approach is required to be adopted.
4. Collaborative Partnership with similar type of organization may prevent switching over of employees.
5. It is necessary to study the effects on human capital in case if the robots are placed to human resources.

Limitations of the Study and Scope for Future Research

This study is primarily based on secondary data and need based primary information. An empirical study was not conducted to validate the finding of the study. Since the environmental factors are ever changing , it will be too early to evaluate and analyse actual implications on Human Resource Management activities in the industry. But it has a wide scope for Researchers, Practitioners and academicians to undertake a detail study of different aspects which will have a considerable effect on HRM.

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THE GROWING NATIVE ADVERTISING LANDSCAPE IN INDIA: ITS EMERGENCE, IMPLICATIONS, RISKS AND OPPORTUNITIES

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Introduction

Native advertising term was first coined by Fred Wilson at Online Media, Marketing, and Advertising Conference in 2011. Social networks like Facebook and Twitter are also avid users of native advertising, meeting advertisers' needs by displaying sponsored posts and tweets throughout their feeds. Starting 2011, Facebook started featuring "Sponsored Stories" in users' News Feed, streamlining its advertisements into a combined unit with social context. Similar to Facebook, Twitter interacts with businesses through its "Promoted Tweets" purchased by advertisers seeking to attract a particular audience group's attention.

Native advertising is an inclusive and relative terminology. The term native advertisement covers a variety of advertisements. According to the IAB, native advertisements include: [Native Advertising Playbook, (2013)]

In-feed units-These advertisements appear in the middle of editorial or social media content on sites such as Facebook or BuzzFeed.

Paid search units-These advertisements are search results, typically highlighted in a different colour, that appear at the top of the page before other search results on sites such as Google, Yahoo!, etc.

Recommendation widgets-These advertisements are posts that appears on the side of a page or at the bottom of an article and recommends additional content for the reader on sites such as Huffington Post or ESPN.

Promoted listings-These advertisements are product listings that might appear on shopping websites or search pages that are promoted by sellers such as Amazon.com or Google.

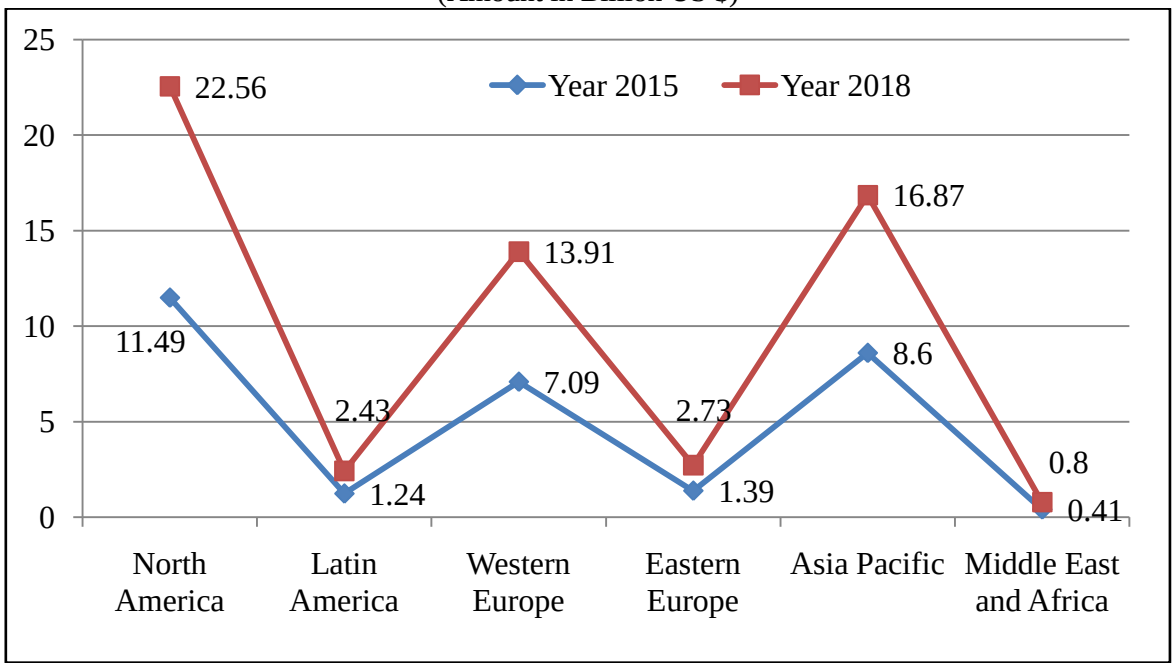
In-ad with native element units-These advertisements contain content that is meant to look like the editorial content around it.

Custom/can't be contained-These advertisements fall into a catch-all category for other native content.

Emergence

With the emergence of the Internet, the 21st century now provides an ideal environment for native advertising. Modern-day native advertising is no longer constrained to radios or TV programs. The rise of search engine companies like Google, Yahoo, etc. have prompted businesses to promote their services through search advertising that automatically help them connect with target customers. The most recent websites to employ native advertising would be digital media giants like BuzzFeed, Mashable and Forbes.

Native Advertising Spending Worldwide in 2015 and expected in 2018
(Amount in Billion US $)



Source: Compiled by Researcher from the data on www.entrepreneur.com/article/290705

Indian Implications

Native advertising is fairly a new approach to digital advertising, in which brands offer content based on what audience are passionate about, as opposed to sponsored content, where brands push their marketing message. These advertisement are called 'native' because they don't appear to be advertisements, rather they appear as a part of content. In fact it is extensive since it is about content and not about the form in which content is rendered. It could be images, text, video, info-graphics, apps or even a micro website. Some common examples are promoted videos, images, articles and music. Examples are sponsored stories on Facebook, promoted tweets on Twitter, paid search results, pre-roll ads on YouTube and so on. There is a variety of forms or layouts of native advertising on mobile such as content walls, app walls, chat list, news feed, content streams, which complement the design of different types of apps. Native advertising is expected to grow from a $1.9 billion market in 2014 to $4.6 billion by 2017, according to research firm BIA/Kelsey. The objective of native advertising is to create appealing content as per the interest areas of the target audience's and then seed their brands message. In a newspaper, it could be a pullout and so on while in a magazine, one can see 3-4 pages of sponsored content. It looks like an article but it's actually written completely by the advertisers. Native advertising is different from traditional advertising because it blends into the content stream but it's an advertisement with a clear advertiser and call to action.

Native advertising is any form of advertising that seeks to attract customers by providing content within the context of their experience. Unlike traditional display or pay-per-click forms of online advertising, native ads are built into the visual design as part of the content.

Brands in India are changing the mode of their advertising. Recently, Indian publication such as Flipkart, Snapdeal, Rediff, NDTV, Zero Games, HT Media and many more have started using Native Advertising for various brands. For **Flipkart and Snapdeal**, it's not enough that they are among the biggest advertisers in the country — they want to be advertising companies of sorts themselves.

As millions more people warm up to shopping online for things as diverse as refrigerators and groceries, these marketplaces are developing capabilities to place ads in their own pages, aiming for a slice of the expanding ecommerce ad pie. They are also partnering with ad tech companies to create contextual ad content - known as native Advertising.

Flipkart was among the earliest to spot an opportunity. The country's most valuable online marketplace recently created an advertisements business segment overseen directly by cofounder and group chief executive Sachin Bansal.

These so-called native ads - often disguised as regular content - are placed strategically on websites to be topically relevant to the content alongside, making them non-intrusive and more effective than traditional banner or pop-up ads. For online marketplace these ads promise a significant additional stream of revenue from the hundreds of thousands of merchants selling wares on their platforms.
"A lot of the ecommerce companies want native ads today," said Piyush Shah, chief product officer at InMobi, a mobile advertising network that competes with global giants such as Google and Facebook. "Native is a big focus area for us as it gives better conversion rates and better quality of users."

HT Media found its beginning in 1924 when its flagship newspaper, Hindustan Times was inaugurated by Mahatma Gandhi. HT Media (BSE, NSE) has today grown to become one of India's largest media companies.
Produced by an editorial team known for its quality, innovation and integrity, Hindustan Times (English newspaper) and Hindustan (Hindi newspaper through a subsidiary Hindustan Media Ventures Limited),Hindustan Times is the choice for nearly 3.7 million readers across India, who turn to it daily for news, information, analysis and entertainment. Hindustan, the group's Hindi daily, continues to be the second-largest daily in the country with a total readership of 36.6 million,(based 0n Indian Readership Survey (IRS) for the first quarter (Q1) of 2011. Both dailies enjoy a strong brand recognition among readers as well as advertisers.

In addition to Hindustan Times, HT Media also publishes a national business newspaper, Mint. Mint is a one-of-its-kind newspaper in the sense that the company has an exclusive agreement with the Wall Street Journal to publish Journal-branded news and information in India. Mint is today the second-largest business newspaper in India with presence in the key markets of Delhi, Mumbai, Chennai, Bengaluru, Chandigarh, Pune, Kolkata and now Ahmedabad too.HT Media has also made its foray into electronic media. Diversifying its ambit of operations, the company in a consulting partnership with Virgin Radio, has launched the FM radio channel – Fever 104. Currently available in Delhi, Mumbai, Bengaluru and Kolkata, Fever 104 has established a strong presence as being one of the most vibrant channels on air. In a short span, the channel's rise has been meteoric considering its position in Mumbai and Bengaluru at No. 1 and in Delhi asthe No. 2 station on the popularity charts.

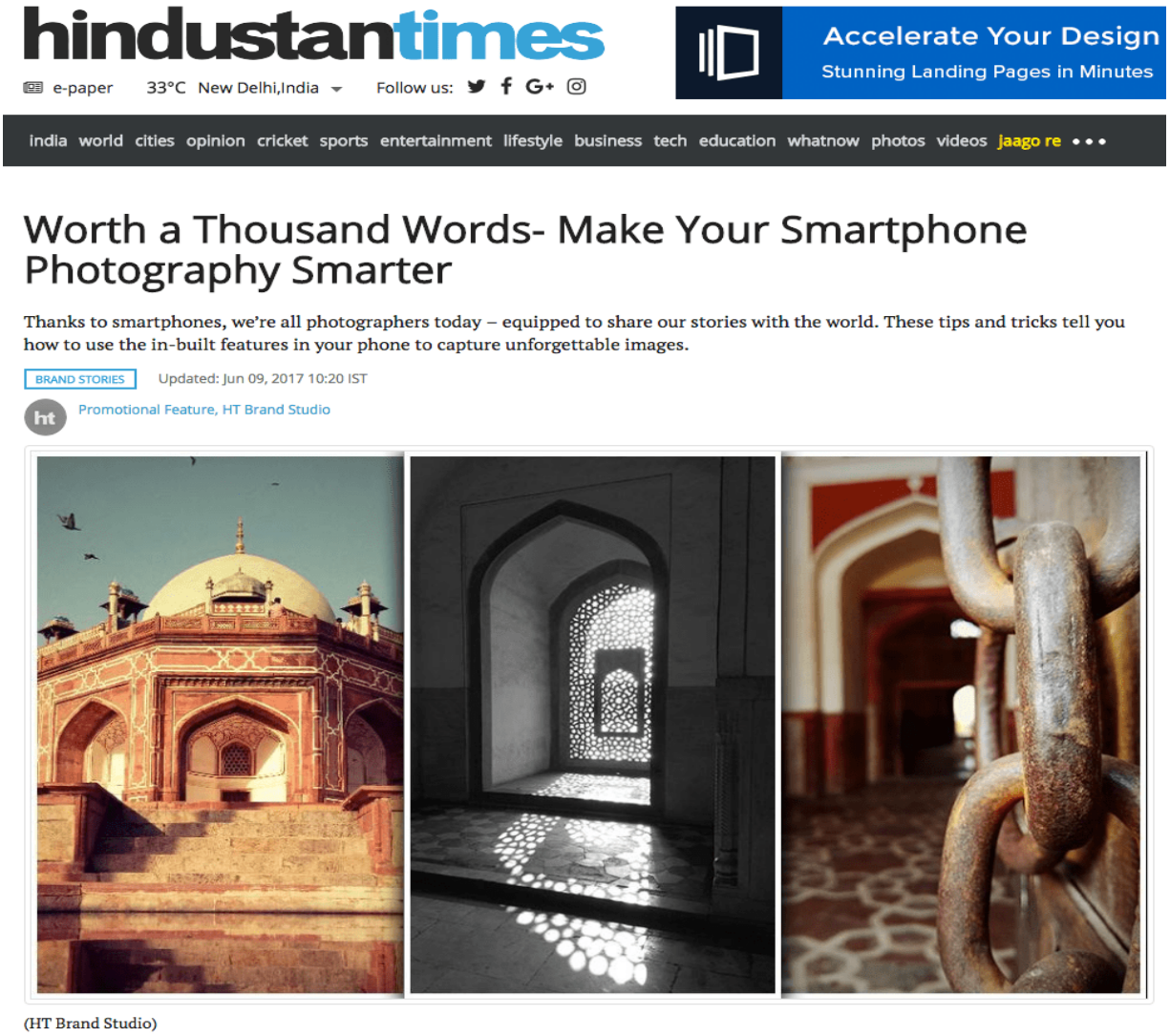
Internet businesses of HT Media incorporated under Firefly E-ventures, operate leading web portals Hindustantimes.com and livemint.com in the general and business news categories respectively. The company's job portal Shine.com which has received high appreciation from consumers and industry for its innovative design and usability crossed 7 million registrations. Desimartini.com -a platform to discover and express oneself on movies. The company also has an education portal www.HTCampus.com aimed at students passing out of school and college to help them take the right decision about their higher education.

While the overall economy continued to face constraints, our diversification strategy kept us in good stead. On a consolidated basis, our Total Revenue reached Rs 2,142 Crore in FY2013, driven Print Advertising Revenues at Rs 1,529 Crore, Circulation Revenues at Rs 223 Crore and Radio Revenues at Rs 78 Cr. Digital revenues also contributed to revenue growth and reached Rs 54 Cr in FY2013. EBITDA improved to Rs 376 Crore in FY2013 and EBITDA margin improved to 18% from 17% in FY2012 mainly due to strict cost control initiatives.

How HT Brand Studio produces native advertising?
HT Brand Studio is an **independent team**, set up specifically to create native content. The editorial team plays no role in creating branded content and it was a conscious decision to keep the two separate.HT Brand Studio is currently an eight member team and we're looking to expand quickly. We're a collective of journalists, creative writers, brand and digital marketers, video producers, animators and graphic designers. But along with the in-house team, we also have a panel of domain experts who work on a project-to-project basis. Outsourcing gives us the flexibility to address a wide range of briefs and novelty to content.

The team is an **eclectic mix** and each member brings something unique to the creative process. We were conscious of this while hiring and sought out curious and engaged minds, each of whom is a storyteller in their own right and in their own way. We ask **all candidates to submit two to three case studies** as part of the interview process. The objective is to assess whether the candidate can think innovatively and outside his/her comfort zone. It has however been hard to recruit for the studio. Finding people with a blend of managerial and client servicing skills, ability to work with product owners while ensuring seamless execution is a tough ask. But over time the team has worked well together and developed many soft skills needed for the job. Our creative portfolio includes; stories, animated and live action videos, info-graphics, comic strips & illustrations, photo essays, webinars, podcasts, microsites & branded pages – basically anything that is web compatible. The team today is well equipped to handle this.

The photo below: *An example of one of HT Brand Studio's native advertising stories on theHindustantimes.com for Lava Smartphone photography.*



(HT Brand Studio)

Risks

It's no secret that India has a massive internet user base. The **society** in India is a **multilingual** in nature. The number of internet users is expected to hit to 730 million by 2020. But many of these users are increasingly surfing the web using regional languages and not English. The local language user base is growing at 47% and will reach to more than 250 million in 2020.

The biggest challenge faced is the **lack of authentic services** in regional language translation. This is one of the reasons still most of the brands prefer to run native ads in English. Approval of vernacular native ads takes time and hence campaign delivery might get affected.

There is possibility of providing **Misleading Information** to the customers while making the native advertising more attractive and effective through various means like stories and visual effects. This is resulting in the dishonesty of advertiser towards the customer and also violates the guiding principles of advertising.

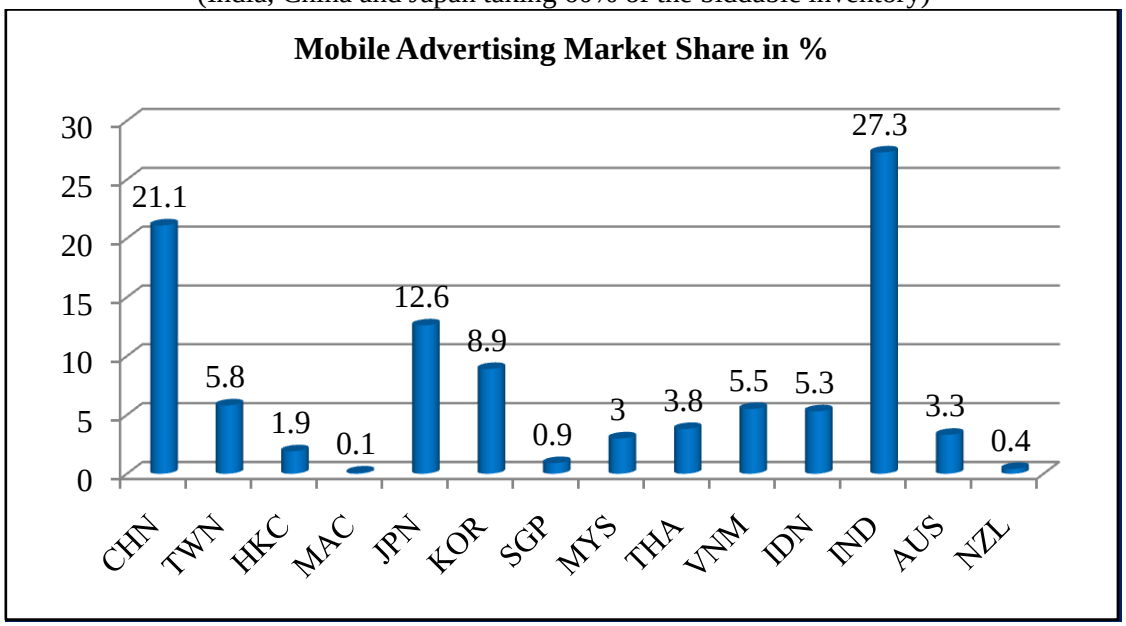
Poor ability and futility of the Contents is the doses for not retaining the customers. The quality of contents developed for the brand publicity and advertising. This is because of the lack of proper and suitable education and training facilities and availability.

There are serious **issues related to transparency and disclosure practices** adopted in native advertising by the advertisers. Not clearly showing the sponsored stories, sponsored identity or showing in the style so that there is further creation of difficulty in visibility. The native advertisers are producing unrealistic and impractical contents to impress the customers. Such issues which are ethical issues, disclosure and transparency issues are hurdles in the positive and smooth development of native advertising landscape in India.

Opportunities

Native advertising is new bracket of revenue available to the advertisers to increase the total earning from the advertising business. The native advertising is beneficial to all forms and types of businesses. It attracts the attention of customers faster than any other mode of advertising. It creates meaningful customer relationship with customer engagement. Moreover the rate of customer retention through native advertising is comparatively better.

Mobile Advertising Market – Top three
(India, China and Japan taking 60% of the biddable inventory)



Source: Compiled by Researcher from the data on www.entrepreneur.com/article/290705

India is holding the first position in case of mobile advertising market with a market share of 27.3% the scope for native advertising is widening. This strong potential of mobile platform has the capabilities to push up this newly evolving type of advertising in India.

The native advertising is an emerging opportunity for advertisers is in many ways such as superior Return on investment, improved reach to the customers, rich & appealing experience, etc. For publishers, it is a new form of premium inventory. For social platforms, it is a new advertising product.

For brands, it is a new opportunities for attention, engagement and message syndication. For agencies, it is a creative and media opportunities. For technology, it is a new solution that facilitates and scales both the creative and delivery aspects of native advertising.

As native advertising is more sympathetic to its environment it is more welcomed by consumers; a recent study from the University of Antwerp stated '86% of consumers are OK with Native advertising'. Thus, native advertising is a sustainable mechanism.
The native advertising is an opportunity to differentiate brand through service. Since, the concept of native advertising is increasingly being driven by competition to deliver the most relevant and engaging content for a specific environment. This pattern has been seen in search marketing over the past 10 years in which success is driven by defining the most appropriate message (and bid) for very specific terms driving forward the utility of that message for both brand and consumer. Native allows this concept to be applied not just to text but to both content and services.

Major Suggestions and Conclusion

- ✓ There is a need of proper education, training, regulations around transparency and disclosure and a greater emphasis on maintaining the authenticity of the created and published native advertising.

- ✓ While creating native advertising disclosures, companies should use an understandable label, consistent language for disclosures, present the disclosure noticeably with brand logos, visually separate the advertisement from editorial content, avoid interaction between the editorial content and the advertisement and avoid over-disclosing.

- ✓ The trustworthy and reliable language translation services are required so that utilization of the benefits of regional language can reach to optimum level. This will surely uplift campaign delivery and will help brands tell their story in an individualistic way.

- ✓ The team should be highly unified because the nature of work requires that everyone works well together. The native advertising department or unit should have more young people and from diverse backgrounds and the nature of roles to be performed is highly creative.

Conclusion

The popularity of native advertising is still on its way to reaching its peak. With traditional publications like The New York Times also creating native ads as part of their offering, it is expected that native advertising will soon become as mainstream as the TV ad. Whether a brand is seeking to promote its service or increase its online presence, businesses will continue to find that going "native" will be a key to their advertising success.

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LIBRARY SERVICES USING OPEN-SOURCE SOFTWARES

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Abstract

In this paper discuss and throw light on concept of use of open source software because the impact of ICT and his development change the educational scenario.Now a days many open source software applications are available for library and information management, the organization have an option to acquire and implement such kind application. Today library promote the global use of digital information through interface and satellite and provide the information to user but at the same time library face so many problems. It also discuss the reasons to use open source software, advantages and disadvantages. All library professionals must be aware about the advantages of OS software and use it in their library for the sake of users on a large scale. Each and every library professional must have at least basic knowledge of maintenance, selection and installation. This paper discuss the definition, feature and software of open source library management.

Keyword:*Open Source Software,Koha, NewGenLib , Evergreen, e-Granthalaya, Greenstone, DSpace, Fedora, Wordpress, Drupal, Ubuntu, Open Office ,Firefox, PDF Creator*

Introduction

Open-source software (**OSS**) is a type of computer software with its source code made available with a license in which the copyright holder provides the rights to study, change, and distribute the software to anyone and for any purpose. Open-source software may be developed in a collaborative public manner. According to scientists who studied it, open-source software is a prominent example of open collaboration. The term is often written without a hyphen as "open source software".

Open-source software development, or collaborative development from multiple independent sources, generates an increasingly more diverse scope of design perspective than any one company is capable of developing and sustaining long term. A 2008 report by the Standish Group states that adoption of open-source software models has resulted in savings of about $60 billion (£48 billion) per year to consumers.

History

In the early days of computing, programmers and developers shared software in order to learn from each other and evolve the field of computing. Eventually the open source notion moved to the way side of commercialization of software in the years 1970-1980. However, academics still often developed software collaboratively, for example Donald Knuth in 1979 with the TeX typesetting system or Richard Stallman in 1983 with the GNU operating system. In 1997, Eric Raymond published *The Cathedral and the Bazaar*, a reflective analysis of the hacker community and free software principles. The paper received significant attention in early 1998, and was one factor in motivating Netscape Communications Corporation to release their popular Netscape Communicator Internet suite as free software. This source code subsequently became the basis behind SeaMonkey, Mozilla Firefox, Thunderbird and KompoZer. The free software movement was launched in 1983. In 1998, a group of individuals advocated that the term free software should be replaced by open-source software (OSS) as an expression which is less ambiguous and more comfortable for the corporate world. Software developers may want to publish their software with an open-source license, so that anybody may also develop the same software or understand its internal functioning. With open-source software. The Free Software Foundation (FSF), started in 1985, intended the word "free" to mean *freedom to distribute* (or "free as in free speech") and not *freedom from cost* (or "free as in free beer"). Since a great deal of free software already was (and still is) free of charge, such free software became associated with zero cost, which seemed anti-commercial. The Open Source Initiative (OSI) was formed in February 1998 by Eric Raymond and Bruce Perens. With at least 20 years of evidence from case histories of closed software

development versus open development already provided by the Internet developer community, the OSI presented the "open source" case to commercial businesses, like Netscape. The OSI hoped that the use of the label "open source", a term suggested by Christine Peterson of the Foresight Institute at the strategy session, would eliminate ambiguity.

Definitions

Open source software (OSS) refers to software that is developed, tested, or improved through public collaboration and distributed with the idea that the must be shared with others, ensuring an open future collaboration. The collaborative experience of many developers, especially those in the academic environment, in developing various versions of the UNIXoperating system, Richard Stallman's idea of Free Software Foundation, and the desire of users to freely choose among a number of products - all of these led to the Open Source movement and the approach to developing and distributing programs as open source software. Despite initially accepting it, Richard Stallman of the FSF now flatly opposes the term "Open Source" being applied to what they refer to as "free software". Although he agrees that the two terms describe "almost the same category of software", Stallman considers equating the terms incorrect and misleading. Stallman also opposes the professed pragmatism of the Open Source Initiative, as he fears that the free software ideals of freedom and community are threatened by compromising on the FSF's idealistic standards for software freedom. The FSF considers free software to be a subset of open source software, and Richard Stallman explained that DRM software, for example, can be developed as open source, despite that it does not give its users freedom (it restricts them), and thus doesn't qualify as free software.

Advantages and disadvantages

Open source software is usually easier to obtain than proprietary software, often resulting in increased use. Additionally, the availability of an open source implementation of a standard can increase adoption of that standard. It has also helped to build developer loyalty as developers feel empowered and have a sense of ownership of the end product. Moreover, lower costs of marketing and logistical services are needed for OSS. OSS also helps companies keep abreast of technology developments. It is a good tool to promote a company's image, including its commercial products. The OSS development approach has helped produce reliable, high quality software quickly and inexpensively. Open source development offers the potential for a more flexible technology and quicker innovation. It is said to be more reliable since it typically has thousands of independent programmers testing and fixing bugs of the software. Open source is not dependent on the company or author that originally created it. Even if the company fails, the code continues to exist and be developed by its users. Also, it uses open standards accessible to everyone; thus, it does not have the problem of incompatible formats that exist in proprietary software.It is flexible because modular systems allow programmers to build custom interfaces, or add new abilities to it and it is innovative since open source programs are the product of collaboration among a large number of different programmers. The mix of divergent perspectives, corporate objectives, and personal goals speeds up innovation. Moreover, free software can be developed in accord with purely technical requirements. It does not require thinking about commercial pressure that often degrades the quality of the software. Commercial pressures make traditional software developers pay more attention to customers' requirements than to security requirements, since such features are somewhat invisible to the customer.It is sometimes said that the open source development process may not be well defined and the stages in the development process, such as system testing and documentation may be ignored. However this is only true for small (mostly single programmer) projects. Larger, successful projects do define and enforce at least some rules as they need them to make the teamwork possible. In the most complex projects these rules may be as strict as reviewing even minor change by two independent developers.Not all OSS initiatives have been successful, for example SourceXchange and Eazel. Software experts and researchers who are not convinced by open source's ability to produce quality systems identify the unclear process, the late defect discovery and the lack of any empirical evidence as the most important problems (collected data concerning productivity and quality). It is also difficult to design a commercially sound business model around the open source paradigm. Consequently, only technical requirements may be satisfied and not the ones of the market. In terms of security, open source may allow hackers to know about the weaknesses or loopholes of the software more easily than closed-source software. It depends on control

mechanisms in order to create effective performance of autonomous agents who participate in virtual organizations.

Open Source Software for Libraries

Open source is a fairly new concept that has gained huge popularity in the field of IT in recent year. Open source software is computer software whose source code is available under a licence for users to look at and modify freely and permits users study, change and improve the software and to redistribute it in modified or unmodified form. The open source software differs from the closed source or proprietary software. The primary difference between the two is the freedom to modify the software. The development of Open source software in the present age has made the transition from traditional to technology based library services ,which gives room for more efficient service provision very easy and cost effective hence, libraries are now adopting them in their technical services, digitization processes and general library management. Open Source Software is an important Library solution which assists in the maintenance, storage, collection and access of Library materials which fulfils the primary objectives of many libraries institutions. The use OSS in libraries is an increasing trend. OSS tools and implementation provide library institutions with access to a dynamic and cost effective solution for content and facilitating communications between various institutional and public entities. Hence, introducing few library management softwares.

Koha: Integrated Library System

Koha is a promising full featured open source ILS (integrated library system) currently being used by libraries all over the world. For those of you out there unfamiliar of what an ILS is, well, it is a system of keeping track of the operations of a library - payroll, expenses, purchases, and most importantly, keeping track of the various media being checked out by the librarians patrons. Many smaller libraries cannot afford to purchase, install, and maintain an ILS, and Koha is a perfect alternative. Koha is built using library ILS standards and uses the OPAC (open public access catalog) interface. In addition, Koha has no vendor-lock in, so libraries can receive tech support from any party they choose.

NewGenLib

NewGenLib (New Generation Library) is an Integrated Library Automation and Networking Solution Developed by Verus Solutions Pvt Ltd and The Kesavan Institute of Information and Knowledge Management, India. In March 2005, NewGenLib version 1.0 was released and versions 2.0 and 2.1 have come up later. On 9th January 2008, NewGenLib has been declared Open Source Software under GNU GPL Licence by the Verus Solutions Pvt Ltd, Hyderabad, India.

Evergreen

Evergreen ILS is another option when researching open source ILS options. Developed by Equinox Software, Evergreen is a robust, enterprise level ILS solution developed to be capable of supporting the workload of large libraries in a fault-tolerant system. It too is standards compliant and uses the OPAC interface, and offers many features including flexible administration, work-flow customization, adaptable programming interfaces, and because its open source, cannot be locked away and can benefit from any community contributions.

e-Granthalaya

e-Granthalaya is a Library Management Software developed by National Informatics Centre, Ministry of Electronics and Information Technology, Government of India. e-Granthalaya is useful for automation of in-house activities of libraries and to provide various online member services. The software provides built-in Web OPAC interface to publish the library catalog over Internet. The software is UNICODE Compliant thus, supports data entry in local languages. Latest version of e-Granthalaya i.e. Ver.4.0 is a 'Cloud Ready Application' and provides a Web-based data entry solution in enterprise mode with a centralized database for cluster of libraries.

Digital Library
Greenstone Digital Library Software

The Greenstone digital library software is an open-source system for the construction and presentation of information collections. It builds collections with effective full-text searching and metadata-based browsing facilities that are attractive and easy to use. Moreover, they are easily maintained and can be augmented and rebuilt entirely automatically. The system is extensible: software "plugins" accommodate different document and metadata types. The aim of the Greenstone software is to empower users, particularly in universities, libraries, and other public service institutions, to build their own digital libraries.

DSpace

Dspace is a groundbreaking digital institutional repository that captures, stores, indexes, preserves, and redistributes the intellectual output of a university's research faculty in digital formats. It manages and distributes digital items, made up of digital files and allows for the creation, indexing, and searching of associated metadata to locate and retrieve the items. DSpace design and developed by Massachusetts Institute of Technology (MIT) Libraries and Hewlett-Packard (HP). DSpace was designed as an open source application that institutions and organizations could run with relatively few resources. It is to support the long-term preservation of the digital material stored in the repository. It is also designed to make submission easy. DSpace supports submission, management, and access of digital content.

EPrints

Eprints is an open source software package for building open access repositories that are compliant with the Open Archives Initiative Protocol for Metadata Harvesting. It shares many of the features commonly seen in Document Management systems, but is primarily used for institutional repositories and scientific journals. EPrints has been developed at the University of Southampton School of Electronics and Computer Science and released under a GPL license.

Fedora

Fedora open source software gives organizations a flexible service-oriented architecture for managing and delivering their digital content. At its core is a powerful digital object model that supports multiple views of each digital object and the relationships among digital objects. Digital objects can encapsulate locallymanaged content or make reference to remote content. Dynamic views are possible by associating web services with objects. Digital objects exist within a repository architecture that supports a variety of management functions. All functions of Fedora, both at the object and repository level, are exposed as web services. These functions can be protected with fine-grained access control policies. This unique combination of features makes Fedora an attractive solution in a variety of domains. Some examples of applications that are built upon Fedora include library collections management, multimedia authoring systems, archival repositories, institutional repositories, and digital libraries for education.

Web Publishing:

Wordpress

Wordpress started out as a quick, free, open-source solution blogging solution just a few years ago; today it is a perfect alternative to building a web site from scratch. In addition to being free to use (and easy to install), the Wordpress community has exploded, with thousands of users and programmers creating custom themes and plug-ins to completely change the way the software looks and operates. The most important aspect of the software is it's easy-touse interface and content management system. With it's visual rich editor, anyone can publish text and photos to the web site. Other options include multiple authors (with separate log-ins), built in RSS (Real Simple Syndication) technology to keep subscribers updated, and a comment system that allows readers to interact with the sites content. A fantastic way to communicate with patrons, staff, etc.

Drupal

Drupal is another open source web publishing option that allows an individual or a community of users to easily publish, manage and organize a wide variety of content on a website. Tens of thousands of people and organizations have used Drupal to power scores of different web sites, including Community web portals, Discussion sites, Corporate web sites, Intranet applications, Personal web sites or blogs, E-commerce applications, Resource directories, Social Networking sites.

Other Computer Programs:

Ubuntu

Ubuntu the most popular player in the Linux based operating system game. (Linux is the open-source answer to Microsoft's Windows operating system; Ubuntu is a modification of Linux). Ubuntu is a perfect solution for libraries who need to upgrade their older computers using outdated Windows or for bulk computer purchases requiring a new operating system. Many libraries feature computers for users to gain access to the internet, and that being the only function those computers serve. Why pay for all the unwanted things on Windows when you just need to get online? You might be a little scared at first of a new operating system, but just like anything else, the hardest part is getting started. Plus, there's plenty of Ubuntu installations help out there to give you a hand.

Open Office

OpenOffice.org is a multiplatform and multilingual office productivity suite and an open-source project. Compatible with all other major office suites, the product is free to download, use, and distribute. It includes the key desktop applications, such as a word processor, spreadsheet, presentation manager, and drawing program, with a user interface and feature set similar to other office suites. Sophisticated and flexible, OpenOffice.org also works transparently with a variety of file formats, including those of Microsoft Office, and the vendor-neutral OpenDocument standard from OASIS.

Firefox

Firefox is the Mozzila organizations answer to Microsoft's Internet Explorer web browser, and has taken the web by storm over the past few years as the biggest competitor to IE in quite some time. Firefox offers a much more secure browsing experience compared to IE (mostly because the majority if the population uses IE and that's who the bad guys are targeting). The biggest draw, however, is the modifications that can be made to Firefox through its many plug-ins, which can make using the net more constructive. Firefox runs on various versions of Microsoft Windows, Mac OS X and Linux.

PDF Creator

The PDF (portable document format) file is an industry standard format that everybody uses everyday. The purpose of creating a PDF file is usually to provide an important document for display that cannot be modified by the reader (unless permission is given). Many programs exist that will enable you to create your own PDF files, but they require you to spend money, which is not in our budget. Instead, we're going to use the open-source PDF creator to take our Open Office files and convert them into professional PDF documents.

Selection criteria of open source software

Evaluation of open source software is different from proprietary programs. A key difference for evaluation is that the information available for open source programs is usually different than for proprietary programs; source code, analysis by others of the program design, discussion between users and developers on how well it is working, and so on. Often proprietary programs always hide all information from users and only allow running the software. Following criteria's can be adopted for open source software selection:

Open Source Software's on the WWW

Most convenient option to identify particular software for your library need is to ask professional friends who have experience in using open source software's. You can directly contact other libraries in your locality or post a message in any popular email discussion forum of librarians. Certain open source software's are highly popular among librarians community, for example Greenstone digital library software is a favourite candidate for the libraries who make use it for the collection and organization of digital materials. Librarians can select the software without much effort,

if more popular software's are available for various library purposes. Websites which provide detailed listing of open source software are:

- Free Software Foundations software directory (www.fsf.org)
- UNESCO Free & Open Source Software Portal (www.unesco.org)
- Source Forge (http://sourceforge.net/)

Open source licenses

Open source licenses are assure users freedom to use, copy, improve and distribution of software. GPL is the most popular license for free and open source software and provides feasible terms of use. Using GPL license, a user can modify the software without the permission of its creator. At the same time BSD license impose certain restrictions on modification of software without the permission of its developer. If you have decided to choose the software with non General Public License, check the license if it contains any un-acceptable clauses.

Conclusion:

So, it seems that there are some very powerful solutions available today that could be used to create a much more resourceful library. By using open source software in the library, money that otherwise would be spent on software solutions can be used for other important resources, such as purchasing additional media resources (books, journals, etc.), or can be used to hire educated, technical support that provides patrons with the know how to better use already existing resources. In addition, this free software is constantly being updated, changed, and customized to meet the library's needs. While all of this is fine and dandy, and sounds like the win-win solution for your library, there are still pitfalls and hurdles we'll need to overcome. Hopefully this article provides some introductory information as to how to wean your library off of traditional computing products and dive into the pool of open source resources available today.

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ISSN 2278-8808
IMPACT FACTOR SJIF 2016- 6.177 SRJIS, V-7(42), 2018

शेतक-यांच्या आत्महत्या ःएक समस्या

प्रा . सुकुमार दत्ता पाटील *अर्थशास्त्र विभाग डॉ . सी . डी . देशमुख वाणिज्य व सौ . के . जी . ताम्हाणे कला महाविद्यालय रोहा रायगड फोनः* ***7276573589***

प्रस्तावनाः

आज भारतीय शेती आणि येथील शेतकरी हा भारतीय अर्थव्यवस्थेच्या पाठीचा कणा आहे असे असले तरी आपल्या देशात दर तीन तासास एक शेतकरी आत्महत्या करीत आहे . भारतातील **40%** शेतकरी अशा स्थितीत येऊन पोहोचले आहेत की जर त्यांना वेगळा व्यवसाय उपलब्ध झाला तर ते एका पायावर शेती व्यवसाय सोडून द्यायला तयार आहेत . त्यामुळे आज आपल्या देशातील शेतक-यांच्या वाढत्या आत्महत्या हा गंभीर प्रश्न बनला आहे आणि त्याकडे विशेष लक्ष देणे गरजेचे आहे . भारतीय शेतक-यांच्या आत्महत्या या भारतात जवळजवळ प्रत्येक राज्यात आज होताना दिसत आहेत . त्यामुळे या प्रश्नाचा आज गांभीर्याने विचार होणे गरजेचे आहे . भारतीय शेतीचे अर्थव्यवस्थेत असणारे महत्व आणि राष्ट्रीय उत्पन्नात शेतीचा असणारा वाटा लक्षात घेतल्यानंतर शेतक-यांच्या आत्महत्या हा विषय फारच गंभीर असल्याचे दिसून येते . त्यामुळे शेतक-यांच्या आत्महत्या थांबल्या पाहिजेत आणि शेतक-याला व शेतीला चांगले दिवस आले पाहिजेत .

अभ्यासाचे महत्व ः

इंग्रज सरकारच्या राजवटीत भारतीय शेतीची म्हणावी तेवढी प्रगती झाली नाही ; कारण त्यांच्या काळात शेतीवर कराचे प्रचंड ओझे होते . परिणामी शेतक-यांनीही शेती व्यवसायात फारसा उत्साह दाखवला नाही . परिणामी भारतीय शेती विकसीत झाली नाही . तसेच तिचे दरहेक्टरी उत्पादनही वाढले नाही . मात्र देशाला स्वातंत्र्य मिळाल्यानंतर भारत सरकारने नियोजनाच्या माध्यमातून देशाचा विकास करण्याचे ठरविले . **1951** साली पहिली पंचवार्षिक योजना सुरू केली आणि या योजनेत शेती विकासावर विशेष भर देण्यात आला . त्यामूळे **1951** ते **1956** या काळात शेती व्यवसायाचा चांगला विकास झाला . परंतू त्यानंतरच्या योजनांमध्ये मात्र औद्योगिक विकास व व्यापार विकास यावर भर देण्यात आला . आणि शेती क्षेत्राच्या विकासावर कमी आर्थिक तरतूद करण्यात आली . तसेच शेती क्षेत्रातील सरकारची गुंतवणूकही कमी होत गेली . त्यामुळे शेती व्यवसाय तोटयात जाऊ लागला . तसेच शेत्रक-यांची अवस्थाही कठीण होत गेली यातून शेतक-यांच्या आत्महत्या सुरू झाल्या आणि ही बाब भारतीय शेती आणि तिचा विकास व ग्रामीण विकास यामध्ये बाधा निर्माण करणारी ठरली . त्यामुळे 'शेतकरी जगला तरच देश जगेल'या उक्तीनुसार शेतक-यांच्या आत्महत्या या समस्येकडे दुर्लक्ष करून चालण्यासारखे नाही . आज भारतात शेती व्यवसायावर आधारित अनेक प्रकिया उद्योग जसे साखर उद्योग ,ताग उद्योग , सुती कापड उद्योग, फळ प्रकिया उद्योग असे उद्योग उदयाला आले आहेत . त्यामूळे औद्योगिक क्षेत्राचा विकास आणि तेथे रोजगाराच्या संधीही वाढत गेल्या . अशास्थितीत भारतातील शेतक-यांच्या आत्महत्या हा प्रश्न अतिशय गंभीर आहे . त्यादृष्टीने हा विषय अतिशय महत्वाचा वाटतो .

अभ्यासाची उद्दिष्टे

1 . शेतक-यांच्या आत्महत्यांचा अभ्यास करणे .

2 . शेतक-यांच्या आत्महत्येसाठी जबाबदार कारणांचा शोध घेणे .

3 . शेतक-यांच्या आत्महत्या रोखण्यासाठी उपाययोजना सुचविणे .

अभ्यास पद्धती

सदरचा अभ्यास हा शेतक-यांच्या आत्महत्यांच्या संदर्भात असून सदरील अभ्यासासाठी दुय्यम साधन सामग्रीचा वापर करण्यात आला आहे . यात भारताचे आर्थिक सर्वेक्षण , नॅशनल क्राईम रेकॉर्ड ब्युरो , शेतकरी मासिक ,तज्ञांची पुस्तके इ . चा आधार घेण्यात आला .

सांख्यिकिय विश्लेषण

भारतात **1995** ते **2015** या काळात नॅशनल क्राईम रेकॉर्ड ब्यूरोच्या अहवालानुसार **3,22,028** शेतक-यांनी आत्महत्या केलेल्या आहेत . त्यात महाराष्ट्र, कर्नाटक ,आंध्रप्रदेश , मध्यप्रदेश आणि छत्तीसगड या मोठया राज्यातील शेतकरी आत्महत्यांचे प्रमाण अधिक आहे . आणि ही बाब अतिशय भयानक आहे हे आपणास ख्यालीलआकडेवारीवरून लक्षात येते .

वर्ष	आत्महत्या केलेले शेतकरी
1995	**10720**
1996	**13729**
1997	**13322**
1998	**16015**
1999	**16082**
2000	**16603**
2001	**16415**
2002	**17971**
2003	**17164**
2004	**18241**
2005	**17131**

वर्ष	आत्महत्या केलेले शेतकरी
2006	**17060**
2007	**16632**
2008	**16796**
2009	**17368**
2010	**15964**
2011	**14027**
2012	**13754**
2013	**11772**
2014	**12360**
2015	**12602**
एकूण	**322028**

वरील तक्त्यामध्ये **1995** ते **2015** या कालावधीतील भारतीय शेतक-यांच्या आत्महत्येची आकडेवारी दिली आहे . या आकडेवारीनुसार **2004** मध्ये भारतातील शेतक-यांच्या तर सर्वात कमी आत्महत्या **1995** साली **10720** इतक्या होत्या . या आत्महत्या रोखण्यासाठी सरकारच्या वतीने विविध प्रयत्न केले जात आहेत . तसेच आत्महत्याग्रस्त शेतक-यांच्या कुटूंबाला मदतही दिली जात आहे . पण असे असले तरी या आत्महत्या काही थांबायला तयार नाहीत .

शेतक-यांच्या आत्महत्या थांबण्यासाठी जुजबी सुधारणांचा आणि उपायांचा समावेश होणार नाही . तर त्यासाठी काही कायम स्वरूपी सुधारणा करणे गरजेचे आहे . राजकारणी , सरकारी अधिकारी आणि समाज यांची मानसिकता बदलणे गरजेचे आहे . या पुढील कोष्टकात महाराष्ट्रातील शेतक-यांच्या आत्महत्यांचे प्रमाण दर्शविले आहे .

वर्ष	शेतकरी आत्महत्या	% वाढ / घट
2001	**3536**	**-**
2002	**3695**	**4 . 30**
2003	**3836**	**3 . 67**
2004	**4147**	**7 . 49**
2005	**3926**	**-5 . 62**
2006	**4453**	**11 . 83**
2007	**4238**	**-5 . 07**
वर्ष	शेतकरी आत्महत्या	% वाढ / घट
2008	**3802**	**-11 . 46**
2009	**2872**	**-32 . 68**
2010	**3141**	**8 . 56**
2011	**3337**	**5 . 87**
2012	**3786**	**11 . 85**
2013	**3146**	**-20 . 34**
2014	**2568**	**-22 . 50**

महाराष्ट्रातील शेतकरी आत्महत्या **2001** ते **2014**संदर्भ -नॅशनल क्राईम रेकॉर्ड

वरील आकडेवारीवरून एक गोष्ट स्पष्ट होते आणि ती म्हणजे **2001** ते **2014** या काळात महाराष्ट्रात **50483** शेतक-यांनी आत्महत्या केलेल्या आहेत .**2006** साली महाराष्ट्रात सर्वात जास्त म्हणजे **4453** शेतक-यांनी आत्महत्या केल्या तर सर्वात कमी आत्महत्या या **2009** मध्ये **2872** इतक्या झाल्या . असे असले तरी शेतकरी आत्महत्या या दरवर्षी न चुकता होत आहेत .

शेतक-यांच्या आत्महत्येची कारणे

1 . **शेतकरी सामाजिकदृष्टया असुरक्षित** - सरकारी नोकर तसेच खाजगी आस्थापनामध्ये काम करणा–या कर्मचा–याप्रमाणे नियमीत पगार, महागाई भत्ता, घरभाडे ,आजारपणात मदत, पेन्शन ,अपघाताप्रसंगी मदत अशा अनेक सामाजिक सुरक्षितता योजना उपलब्ध आहेत . मात्र शेतक-यांना अशा कोणत्याच सामाजिक सुरक्षितता योजना नाहीत . परिणामी त्याला शेती व्यवसायावरच अवलंबून रहावे लागते . परिणामी शेती व्यवसाय नुकसानीत गेल्यास त्यांना आत्महत्येशिवाय पर्याय रहात नाही .

2 . **शेतमालाच्याबाजारभावाचीअनिश्चितता-** डॉ . स्वामीनाथन यांनी शेतक-यांना उत्पादन खर्चावर आधारित भाव द्यावा असे सांगीतले मात्र त्याची अंमलबजावणी आजही होत नाही . भारतीय शेतक-यांवे दुर्दैव म्हणजे उन्हात, वा-यात ,पावसात ,थंडीत कावाडकष्ट करून जो शेतकरी शेतमाल पिकवितो त्या शेतक-याला आपल्या शेतमालाचा भाव ठरविण्याचा अधिकार नाही . तर व्यापारी त्याच्या मालाचा दर ठरवितो जो कधी शेताच्या बांधावर गेला नाही परिणामी हा व्यापारी कमी भाव देऊन स्वत:चा फायदा आणि शेतक-यांची मात्र पिळवणुक होते .

3 . **नैसर्गिक आपत्ती-** भारतीय शेती ही पावसावरील जुगार मानली जाते . कारण जेव्हा वेळेवर आणि योग्य पाऊस पडतो तेव्हा शेती चांगली पिकते . मात्र जेव्हा दुष्काळ पडतो तेव्हा शेती पिकत नाही . कधी दुष्काळाने शेतीचे नुकसान होते तर कधी अतिपावसाने शेतीचे नुकसान होते आणि शेतकरी आत्महत्या करतात .

4 . **कर्जपुरवठयाचा अभाव** -ग्रामीण भागात कर्जासाठी सावकाराचा आधार घ्यावा लागतो . कारण ग्रामीण बॅका आणि राष्ट्रीयकृत बॅका ग्रामीण भागात उपलब्ध नसल्याने शेतक-यांना कर्जासाठी सावकाराकडे जावे लागते . पण सावकाराचे व्याजदर जास्त असल्याने शेतक-यांची पिळवणूक होते आणि शेतकरी आत्महत्या करतात .

5 . **सवलतींचा व धोरणांचा लाभ**-सवलतींचा व धोरणांचा लाभगरीब शेतक-यांपर्यंत पोहचत नाही . मोठे शेतकरी राजकारणी आणि सरकारी अधिकारी यांच्या अभद्र युतीमुळे श्रीमंत शेतकरीच या सरकारी सवलतींचा लाभ घेतात आणि गरीब शेतक-यांना आत्महत्या करण्यावाचून पर्याय राहात नाही

6 . **निर्यात धोरण-** जेव्हा शेतमालाची आवक कमी होते तेव्हा घाऊक बाजारात भाववाढ झाल्यावर शेतमालाचे निर्यात मुल्य वाढविले जाते व निर्यात थांबविली जाते . परिणामी शेतक-यांचे नुकसान होते . कांद्याचा घाऊक बाजारात भाव वाढल्याबरोबर कांद्याचे निर्यात मुल्य हे **250** यू . एस . डॉलर वरून **700** यू . एस . डॉलर प्रती टन इतके सरकारने वाढविले . निर्यात मुल्य भरणे कठीण झाल्याने निर्यात ठप्प होऊन मिळेल त्या भावाने शेतक-याला आपला कांदा विकावा लागला .

7 . **कौटूंबिक समस्या** -आज गरीब शेतक-यांना अनेक कौटूंबिक समस्यांना तोंड द्यावे लागते त्यामध्ये सततची नापिकी, कमी भाव, मुलामुलींचे उच्च शिक्षण मुलीचे लग्न अशा एक ना अनेक समस्यांना शेतकरी तोंड देत आहे . त्यामुळे शेतकरी निराश होऊन आत्महत्या करतात .

निष्कर्षः

शेतक-याच्या आत्महत्येला वरील सर्व कारणे जबाबदार आहेत . मित्रहो या देशात एखादा व्यापारी, एखादा कारखानदार,एखादा उद्योजक यांनी आत्महत्या केली आहे असे क्वचितच आढळेल . पण या सर्वांना मोठा करणारा, कोटयावधी जनतेचा पोशिंदा जो शेतकरी तो मात्र आता मोठया संख्येने आत्महत्या करीत असल्याचे दिसते आहे . आणि ही गोष्ट कृषीप्रधान भारताला निश्चितच भूषणावह नाही . त्यामुळे हे कोठेतरी थांबलेच पाहिजे आणि शेतक-यांना चांगले दिवस आलेच पाहिजेत . यासाठी काही उपाययोजना होणे आवश्यक आहेत त्या पुढीलप्रमाणे

1 . डॉ . स्वामीनाथन आयोगाप्रमाणे शेतमालास उत्पादनखर्च व 50% नफा गृहित धरून हमीभाव देणे अत्यंत गरजेचे आहे .

2 . सरकारी धोरणे किंवा सवलती जाहिर केल्या जातात त्यांची अंमलबजावणी वेळेवर करणे व यावर नियंत्रण ठेवणे

3 . देशात कृषी विद्यापीठे आणि कृषी महाविद्यालये यांची संख्या वाढविणे आवश्यक आहे .

4 . शेतक-यांचे समुपदेशन करणे .

5 . सामाजिक सुरक्षितता योजना शेतक-यांनाही चालू करणे .

संदर्भः

1 . शेतक-यांच्या आत्महत्या :- वास्तव आणि उपाय ,अथर्व पब्लिकेशन पूणे
2 . नॅशनल काईम ब्युरो रेकॉर्ड 2014
3 . भारतीय अर्थव्यवस्था डॉ . राजेंद्र रसाळ
4 . स्टेट काईम रेकॉर्ड ब्यूरो 2014
5 . Economic Survey of Maharashtra

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SRJHSEL strongly recommends following format of manuscripts. The first page of the submission should include the title of the article, the name of the **author(s), institutional affiliation, email address (es) Title:** Times New Roman, bold, 14 pt., space 6 above and 6 below, centered. **Name of the Author(s):** Times New Roman, 12 pt., bold, centered, below the title. **Author(s) affiliation, email address (es):** Times New Roman, 10 pt., italic. **Abstract:** Abstracts of no more than 10 lines summarizing the primary argument(s) and finding(s) in the article should be included at the beginning of the article. Times New Roman, 10 pt., italic, not exceeds than150-200 words. **Keywords:** Times New Roman 12 pt., maximum 5 keywords. Articles should be between 2,000 and 4,000 words in length. The pages of the typescript should be numbered in consecutive sequence, with Justify alignment. **Page numbering:** position right, Times New Roman, 12 pt. All articles must be typed in a **Microsoft Word** file. **Subtitles** (sub-headings) use Times New Roman, 12 pt., bold, left justified. **Main text** font use Times New Roman, 12 pt., justified. Articles should be single spaced and have 2.54 cm (1 inch) margins. Please separate paragraphs by one empty line (touching „enter" key once). All abbreviations and acronyms should be defined at first mention. To facilitate reader comprehension, abbreviations should be used sparingly/carefully. Article should be free from spelling and grammatical mistakes. **APA style** of referencing should be used for article referencing. **Tables & Figures:** Number tables / figures are consecutively as they appear in the text. Center tables / figures close in the text where they are first mentioned. Do not split tables / figures across two pages. If there is not enough space at the bottom of a page, continue your text and place the table at the top of the next page. Each table / figure must have a label (title) beginning with the table number and describing the contents. The label needs to inform the reader what the table / figure presents (coefficients, means, percentages, rates, etc.), the time frame, and the geographical coverage. Each row and column of a table must have a heading. If the contents of a table / figure are drawn or adapted from a published source, note that as footnote to the table. **Major Elements of Paper: Title:** It should be short, precise. **Authors:** Name, Address, qualification, and institutional affiliations etc. should be provided

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