Special Issue of

National Conferences on

'Emerging trends and technologies in the area of I.T., Science, Commerce and Management'

26th & 27th Feb, 2020

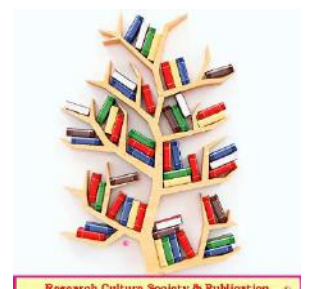**Benefits to publish the Paper in IJIRMF**

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National Conference on

"Emerging Trends and Technologies in the area of I.T., Science, Commerce and Management"

26th and 27th February, 2020

The Managing Editor:

Dr. Chirag M. Patel

(Research Culture Society & Publication – IJIRMF)

Editor:

Dr. Mamta Singh

Dy. Director, Sai College Bhilai

(M.C.A, M.Phil, Ph.D)

Co-editors:

Dr. Vimal Kumar

Asst. Prof. (Commerce), Sai College Bhilai

(M.Com. , M.Phil., PGDCA, M.A.(Hindi), B.ED, Ph.D)

Mr. Sushil Kumar Dubey

Asst. Prof. (Computer Science), Sai College Bhilai

(B.Sc - Electronics , PGDCA, M.C.A.)

Organized By :

Sai College, Sector-6, Bhilai
Chhattisgarh, India

National Conference

On

"Emerging Trends and Technologies in the area of I.T., Science, Commerce and Management"

26th and 27th February, 2020

SAICON - 2020

(Conference Proceedings – Special Issue)

EDITORIAL MESSAGE

"Emerging Trends and Technology in the areas of IT, Science, Commerce and Managements" is the centre of attraction for society. Our objective is to bring out the research study which is carried by young scholars in the field of technology. So that's we have decided to organize such conference. I extend my heartfelt warm welcome to all the expert faculty members, participants and delegates. We assume you a great deal of knowledge sharing and expert interactions during this National Conference. It is an honor to work for Sai Mahavidyalaya as an editor with zeal of enthusiasm, passion, curiosity and expertise in the field of this generation and technologies.

This National event will be academically beneficial to all men, women, young and old pictures and professional and other educational field who are passionate about research. The Sai committee program includes delivery of talks by experts.

It is my great pleasure to welcome you to the National conference on "SAICON2020" which takes place in steel city Bhilai Nagar on 26th & 27th February 2020. It has been a privilege to serve as the editor of the conference. The conference span is two days and various keynote presentation will provide by the subject experts from different states of University. This event will provide ample opportunities for discussion, exchange of ideas and information among conference participants.

The conference would not have been possible without the enthusiastic and hard work of a number of colleges. We would like to express our appreciation to the Technical program chairs & keynote speakers. We would like to acknowledge the efforts of our (TPC) Technical Paper Committee members and for their help in the review process. We are also grateful to all authors who trusted the conference with their work.

Special thanks to chair person and keynote speakers Dr. K.S.Vishwakarma and Dr. Shailendra Bharal for showing their experience to us.

Editors	Co-Editors	Co-Editors
Dr. Mamta Singh Deputy. Director Sai College	**Dr. Vimal Kumar** Assistant. Professor Sai College	**Mr. Sushil Kumar Dubey** Assistant Professor Sai College

About Sai College:-

Sai Mahavidyalaya (Sai College), Bhilai, under Happy School Educational Society (Established in 1974), Registered under the Societies Registration Act was established in the year 2005.

The College has been established looking into the need of Quality Higher Education in the field of Computers, Science, Commerce and Arts of international level for overall growth and all round development & taking education beyond the walls of the classroom and books in the real world to shape actual leaders, masters and role models of tomorrow TODAY…

Sai Mahavidyalaya will incorporate innovative teaching methods with emphasis on practical and on ground exposure to prepare them ready for exposure to the corporate world.

About the Department of IT, Science, Commerce and Management:-

Departments of IT, Science, Commerce and Management Sai College conduct various UG Program in their respective subject. Dept of Biotechnology under Dept. of Science conducts PG Course along with the UG course. All the departments work with common mission to make students conceptually strong in their respective subjects and to prepare them to face the professional world. All the developments focus on developing interest of the students towards research activities.

About the National Conference:-

A National Conference- Emerging Trends & Technologies in the area of IT, Science, Commerce & Management is organized by the faculty of Science, Commerce & Management. The primary outcome of the conference is to provide convincing research ideas and strategies for innovative trends and Technologies in the area of Science, Commerce, Management and IT. While achieving this primary outcome it would be a greater opportunity for various area delegates to exchange new ideas and experiences face to face & to establish new trends and technologies in multidisciplinary areas.

It is my great pleasure to welcome you to the National Conference on "SAICON-2020" which takes place in steel city Bhilai Nagar on 26th & 27th February 2020. It has been a privilege to serve as the editor of the conference. The conference span is two days and various Keynote presentations will provide by the subject experts from different states of University. This event will provide ample opportunities for discussion, exchange of ideas and information among conference participants.

The conference would not have been possible without the enthusiastic and hard work of a member of colleges. We would like to express our appreciations to the Technical program chairman & keynote speaker, for their valuable contribution in assembling the high quality conference programmme.

डॉ. अरूणा पल्टा
कुलपति

Dr. Aruna Palta
Vice Chancellor
Office – 0788-2359800;

हेमचंद यादव विश्वविद्यालय
रायपुर नाका, दुर्ग (छ.ग.) – 491001

HEMCHAND YADAV VISHWAVIDYALAYA
RAIPUR NAKA, DURG (C.G.) – 491001
E-Mail – vicechancellor@durguniversity.ac.in

दिनॉक - **20.02.2020**

शुभकामना संदेश

मुझे यह जानकर हर्ष हुआ कि साई महाविद्यालय, सेक्टर - 6, भिलाई के **विज्ञान, कम्प्यूटर, वाणिज्य एवं प्रबंधन विभाग** द्वारा राष्ट्रीय शोध संगोष्ठी का आयोजन 26 - 27 फरवरी 2020 को "Emerging Trends & Technologies in the area of I.T. Science, Commerce and Management" विषय पर किया जा रहा है। विषय अत्यंत ही समीचिन, प्रासंगिक एवं संदर्भित है। शोध संगोष्ठी में विषय विशेषज्ञों, प्राध्यापकों, शोधार्थियों एवं विद्यार्थियों द्वारा प्रस्तुत शोध पत्र एवं गहन विचार विमर्श संगोष्ठी की उपादेयता में अभिवृद्धि करेगा।

शोध पत्रों का संकलन कर **शोध संक्षेपिका (स्मारिका)** के प्रकाशन हेतु शुभकामनाऐं!

(डॉ. अरूणा पल्टा)
कुलपति

प्रति,
प्राचार्य, साई महाविद्यालय सेक्टर - 6, भिलाई

कवयित्रीबहिणाबाईचौधरीउत्तरमहाराष्ट्रविद्यापीठ, जळगाव
Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon
(Former North Maharashtra University)
Umavinagar, JALGAON – 425 001 (M. S.), INDIA

K. S. Vishwakarma
Ph. D.

Professor,
Department of Biochemistry,
School of Life Sciences

Tel : +91 257 2257424(O)
Mob : +91 9422779455
Fax : +91 257 2258403
Email:
kishorvishwa@gmail.com
ksvishwakarma@nmu.ac.in

MESSAGE

It is a matter of great pleasure to know that the "Sai College, Bhilai" is organizing a National Conference on "Emerging Trends and Technologies in the area of IT, Science, Commerce and Management" during 26 – 27 February, 2020.

I strongly feel that the world is at the cusp of an exponential and dynamic technological revolution instigating knowledge and information from diverse fields. I hope these two days of scientific discussions and presentations by experts as well as new research carried out by young scientists will provide a perfect rostrum for the related areas of research. Given the rapid growth in these frontiers, the deliberations will attempt to address the scientific background and key aspects of technologies influencing daily lives. In the backdrop, it will serve as a national platform for sharing knowledge with others.

The success of the conference is defined by the diligent efforts put by many people who have worked to plan and organize both the technical program and supporting arrangements. These individuals are giving their best to ensure the realization of the potential for this conference, and I thank them for their dedication and hard work.

I am sure that all the delegates, experts, students and researchers will be tremendously benefited from the deliberation of this conference in a warm and friendly environment.

I extend my very sincere wishes for the success of this conference and prosperous future of the college. My congratulations to the Principal and all his colleagues for organizing this event.

20th February, 2020.

(K. S. Vishwakarma)

डॉ. शैलेन्द्र कुमार भारल
सदस्य, अध्ययन मण्डल, वाणिज्य
प्राध्यापक एवं अध्यक्ष, वाणिज्य विभाग
शा. कालिदास कन्या स्नातकोत्तर महावि., उज्जैन

सी—10/8, महाकाल वाणिज्य केन्द्र
नानाखेड़ा उज्जैन
08319264160 — 9424850939
E-mail : skbharal02@gmail.com

दिनांक : 15.02.2020
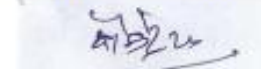
संदेश

अत्यन्त प्रसन्नता का विषय है कि सांई महाविद्यालय, भिलाई द्वारा **"Emerging Trends & Technologies in the area of I.T., Science, Commerce and Management"** पर दिनांक 26 एवं 27 फरवरी, 2020 को राष्ट्रीय सेमीनार का आयोजन किया जा रहा है। शोध पर आधारित यह सेमीनार गुणवत्तापूर्ण शोध एवं शोध में नवीन व तकनीकी पहलुओं का समावेश कर विद्यार्थियों एवं शोधार्थियों को नई दिशाएं व स्वरुप प्रदान करेगा। सेमीनार के लिये समसामयिक विषय का चयन करने के लिये महाविद्यालय परिवार को कोटिशः बधाई।

देशभर से राष्ट्रीय सेमीनार में सहभागिता कर रहे विद्वानों द्वारा शोध विषय पर अपनी प्रस्तुती के माध्यम से शोध के विविध आयामों द्वारा प्रकाश डाला जायेगा, जिसका लाभ शोध जगत को प्राप्त होगा।

मैं आयोजकों को हार्दिक बधाई देते हुये राष्ट्रीय शोध सेमीनार की सफलता की कामना करता हूँ।

(डॉ. शैलेन्द्र कुमार भारल)

प्रति,

प्राचार्य,
सांई महाविद्यालय,
भिलाई

G:\DATA\FOLDER OF RESEARCH ARTICAL\P-H.D. REPORT\SHUBHKAMNAYE SANDESH - COPY.DOCX

GOVT.V.Y.T.PG.AUTONOMOUS COLLEGE, DURG, 491001 (C.G.)

(Former Name – Govt. Arts & Science College, Durg)

Phone-0788-2211688, Fax- 0788-2212030

NAAC Accredited Grade 'A⁺'; CPE Phase - III (UGC, N. Delhi); STAR College Status (DBT, N Delhi)

Website – www.govtsciencecollegedurg.co.inEmail – pprinci2010@gmail.com

MESSAGE

It is a matter of great pleasure that the national conference on **"Emerging trends and technologies in the area of I.T, Science, Commerce & management"** is being organized by Sai College, Sector-6, Bhilai, Chhattisgarh .In the era of modern communication and information technology, scientism with the creativity and innovation should be the subject of research work. This conference is multidisciplinary .So, it will definitely be beneficial for the researchers, teachers and all students present in the conference .this conference will motivate the young researchers and provide them the energy to be dynamic for new innovations. My heartiest congratulations for the successful organization of this national conference.

Dr. R. N. Singh

Dr. D.B.Tiwari
Principal
Organizing Secretary

MESSAGE

It is a matter of great pleasure that the National conference on "emerging trends and technology in the areas of IT, science, commerce and management" is being organized by the department of computers, Science commerce and management in the college. Every aspect of a person's life is related to the circumstances in the era of modern communication and information technology, the meaning of the above mentioned topic seems natural. I believe that, with the creativity of professor as the efforts of research scholars and the experience of the elder, the participation of students will provide relative achievements. With the publication of research papers the academicians/ industrialist will get useful material for life in the form of symposium.

Congratulations and best wishes to the board of organizers for the successful organization of the National Conference.

(प्राचार्य)

Dr. D.B.Tiwari

Mr. H.S.Sachdev
Director
Patron

MESSAGE

Department of Science, Computer science along with Commerce and Management of Sai College, Bhilai, Chhattisgarh takes the proud privilege to organize National conference on "26th-27th February 2020".

This conference is a humble Endeavour to bring academicians, researchers and industrialist together on a single platform to explore New horizons in the field of IT, Science, Commerce and Management and its impact on society.

We hope that this discussion and deliberations will give new direction to the budding scholars.

We hope this conference proceedings will be helpful and useful for research and commercial application. My best wishes to all the participants and all the members of organizing committee. I hope this conference will energize all the contributions and will be a grand success!

Thank you

Mr. H.S.Sachdev

Dr.(smt.) Mamta singh
CONVENER

MESSAGE

I am immensely happy to organize the National conference on "Emerging Trends & Technologies In The Areas of IT, Science, Commerce and Management" on 26th-27th February 2020 at Sai College Bhilai. To validate hypothesis objective is to explore the experiences of experts related in concerned fields across the nation.

During these two days, through paper presentation and expert talks, there shall sincere brain storming to understand the latest technologies available in the area of Science, Computers, Commerce and Management. We are grateful to the contributors who have sent their well-researched papers and all the delegates for choosing the seminar for showcasing their quality research work. We acknowledge the suggestions and comments received from all the members of the advisory committee and organising committee who spared their precious time to give valuable guidance. We are grateful to our principal, HOD's, & staff members for not only motivating but also providing necessary technical supports and prompt corporation, our special thanks to the college authority's for not only permitting us to conduct the seven but also providing all the necessary facilities and encouragement.

Thank you

Dr.(smt.) Mamta singh

Conference Committee

Advisory Committee

Dr. Shailendra Kumar Bharal (Professor & H.O.D. Comm.) Govt. Kalidas girls PG College, Ujjain M.P.
Dr. K.S. Vishwakarma (Professor, School of life science) Kayayitri Bahinabai University, Jalgaon M.H.
Dr. Sanjay Kumar (H.O.D, S.O.S. in Computer Sc. & IT) pt. R.S.U. Raipur, C.G.
Dr. V.K.Patle (Asst. Prof, S.O.S. in Computer Sc. & IT) pt. R.S.U. Raipur, C.G.
Dr. R. N. Singh (Principal) Govt. V.Y.T. PG Autonomous College, Durg C.G.
Dr. Prashant Shrivastav (Asst. Prof. Geology) Govt. V.Y.T. PG Autonomous College, Durg C.G.
Dr. Y. R. Katre (Principal) Kalyan PG College Bhilai, C.G.
Dr. R. P. Agrawal (H.O.D. Dept. of Mgmt.) Kalyan PG College Bhilai, C.G.
Dr. Omkarlal Shrivastav (H.O.D. Mathematics) Govt. Girls Kamla Devi Rathi PG College, Rajnandgaon C.G.
Dr. Bhawna Pandey (Asst. Prof. Biotechnology) Bhilai Mahila Mahavidyalaya, Sector 9, Bhilai C.G.

Organizing Committee

Dr. Pratibha Gumastha (H.O.D Chemistry), Dr. Aditi (H.O.D. Biotechnology), Dr. Anju Kumari (H.O.D. Commerce), Dr. Vimal Kumar (Ass. Prof. Commerce), Dr. Sanju Singh (Ass. Prof Commerce), Mrs. Sheetal Sharama (H.O.D. Mathematics), Mrs. Shashi Sahu (Faculty Biotechnology), Mr. Sushil Kumar Dubey (Faculty Computer Sc.), Mr. Dhirendra Parate (Faculty Computer Sc.), Ms. Sujata (Faculty Chemistry), Ms. Shraddha Namdeo (Faculty Management), Mrs. Reshu Chaurasia (Faculty Management) , Ms. Heena Godwani (Faculty Commerce)

DAY-I, 26.02.2020

Technical Session I (Time 9.00 AM to 12.45 PM)

9.00 to 10.30	-	Registration & Kit Distribution
10.30 to 11.30	-	INAUGRAL CEREMONY
		By Dr.(Smt.) Aruna Palta, and
		Vice Chancellor of Hemchand Yadav University, Durg (CG)
		Dr. R. N Singh
		Principal, Govt. VYT PG Autonomous College, Durg
11.30 to 12.00	-	HIGH TEA
12.00 to 12.45	-	Keynote Address
	(1)	Dr.Y. R. Katre
		Principal Kalyan PG College, Bhilai
	(2)	Dr.Bhawana Pandey,
		Asstt. Prof. & HOD Biotechnology, Bhilai

Sr.No.	Paper Presentation Session
1	"Conservation of waste in to best" A physio-chemical analysis of fly ash of captim thermal power plant of J.K.Lakshmi Cement Ahiwara, Durg(CG). *By- Dr.Pratibha Gumasta*
2	A Physio-chemical analysis soil from industrial area of Akaltara(Janjgir Champa) CG. *By Dr. Naresh Chandra Deshmukh, Dr.Sunita Gupta*
	LUNCH (1.30 to 2.00 PM)
3	Antimicrobial properties of green synthesized silver nano particles. *By- Sangita Sharma, Kaushilya Sahu, Vaidehi Sharma*
4	Low thersold laser *B-y Dr.Kirti Vishwakarma, O.P. Vishwakarma*
5	Influence of extraction method on citric acid & nutritional benefit of citrus fruits, Bhilai area. *By- Ms.Sujata*
6	Assesment of Phycho chemical parameter of discharge pond of BEC Food Industry. *By- Dr.Chaitali Mathew, K.R.Jyoti*
7	Clustered Regularly Interspaced Shori Palindromic Repeats (CRISPR/Cas9):A Review. *By- Preeti Verma*
8	Nup358 interacts with Dishevelled & aPKC to regular Neuronal polarity. *By- Dr.Aditi Singh*
9	Review on Biofuel & Clean Energy. *By- Mrs.Shashi Sahu*

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DAY-II, 27.02.2020

11.00 to 11.45 -   Keynote Address

                (1)   Dr.K.S.Vishwakarma

                Professor School of Life Sciences, Kavayitri

                Bahinabai Chaudhary North Maharashtra University, Jalgaon

11.45 to 12.30 -   (1)   Dr.Omkar Lal Shrivatav,

                Professor HOD Kamla Rathi Govt. College   Rajnandgaon

12.30 to 12: 12:45   (2)   Dr.Subhash Chandra Srivastav

                Professor (HOD – Dept of Applied Mathematics)

                Rungta College of Engineering and Technology

Technical Session I (Time 12.45 AM to 1.30 PM) &

Sr.No.	Paper Presentation Session
1	Geochemical Modeling of high fluoride concentration in groundwater using PHREEQC- a review. *By- Meena Chakraborty*
2	Impact of fluoride on Glucose and recovery by melatonin in cat fish.(Heteropneustes fossils) *By- Dr.Pushpa Sharma*
3	Disease cost by Microorganism due to contaminated water and their precautions. *By- Nikita Mishra*
4	Studies of some free living prozones from different ponds of Bhilai CG. *By- Dr.Saman Siddique & Saroj Singh*
LUNCH (1.30 to 2.00 PM)	
5	Methanogenesis, a promising approach to produce biofuels. *By- Saroj Singh, Dr.Saman Siddique*
6	A review on agricultural & challenges through IOT in India. *By- Mr.Digeshwar Prasad Sahu, Mr.Mahendra Dwivedi*
7	Roll of Pseduomonas spcies as biofertilizers & biocontrol agent. *By- Niharika Dewangan, Shrin Anwar*
8	Iterated function system in S-metric space. *By- Priyanka, S.C.Shrivastav, R.Shrivastav*
9	*By- Dr. Aruna Sao*

DAY-I, 26.02.2020

Technical Session I (Time 2.00 PM to 4.30 PM)

12.00 to 12.45   -   Keynote Address

(1)   Dr.Shailendra Bharal

Prof. & Head Dept. of Commerce
Govt. Kalidas Girls PG (Lead) College Ujjain (MP)

12.45 to 1.30   (2)   Dr. R. P Agarwal

HOD Dept. of Management

Kalyan PG College, Bhilai, C.G.

1.30 to 1:45   (3)   Dr.Shobha Sinha

Professor National Institute of Technology

Raipur (CG)

1.45 PM - 2.15 PM   **LUNCH**

Technical Session II (Time 2.15 PM to 5.00 PM)

Sr.No.	Paper Presentation Session
1	Impact of E-Commerce & Big Box retailer on local retailers. A case study of Srijee Super Bazar in Bhilai. *By- Sameer Jaiswal, Seema Jaiswal*
2	Impact of emotional intelligence for improve work life balance in norm executive employees in Indian Railways Bilaspur Zone(SECR) *By- Dr.Anand Kumar Choudhary*
3	छत्तीसगढ़ राज्य ग्रामीण बैंकों में ई-सेवाओं के विकास और जमा के प्रकारों के विकास के मध्य सह संबंध का अध्ययन - *By- Neha Kaushik, Dr.Paritosh Dube*
4	Effectiveness of Human Resource information system on the Role of HRM *By Ms.Shradha Namdeo*
5	Data security of big data in big promises. *By Durgesh Kumar Kotangle*
6	Competitive advantage through green human resource management a comprehensive literature survey *By- Dr.Elizabeth George*
7	E-Commerce –New revaluation round the corner of India. *By- Dr.Vijay Karmakar*
8	लघु एवं कुटीर उद्योगों के विकास में ई-कामर्स के महत्व का अध्ययन। (दुर्ग जिले के संदर्भ में) *By- Dr.Sanju Singh*
9	The impact of M-COMMERCE in India. *By - Dr.Rincey B Abraham*
10	Appreciation of job scheduling algorithm to improve computation performance in Grid System. *By- Surendra Kumar Patel. Anil Kumar Sharma*
11	Customer Perception towards Net Banking and Mobile Banking. *By- Nidhi Goenka, Dr.S.S.Khanuja.*
12	Literature Survery on Trends in Educational Data Mining. *By Dr. Gyanesh Shrivastava, Vivek Prakash Sahu.*
13	Security Issues on Cloud Based Internet of Things. *By- Jyoti Sharma, Surendra Kumar Patel, V.K.Patle*

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DAY-II, 27.02.2020

Technical Session I (Time 10.00 AM to 1.30 PM)

12.00 to 12.45   -   **Keynote Address**   &   1.30 PM to 2.00 PM   **LUNCH**

Dr.V.K.Patle Asst.Prof., SoS in Computer Science & IT, Pt. Ravishankar Shukla University, Raipur (C.G.)	Dr.Durga Prasad Rao HOD Computer Science & IT, Sri Shankaracharya Mahavidyalaya, Junwani, Bhilai(CG)
Dr.G.K.Deshmukh Institute of Management Pt.Ravishankar Shukla University Raipur (CG)	Dr.S.R.Thakur Professor, Department of Commerce VYTPG Government Autonomous College, Durg.

Sr.No.	Paper Presentation Session
1	Stress Management in the work place *By- Dr.Shivangi Dwivedi*
2	A study of tax saving instruments of individual tax payers *by- Dr.Sunita Kshatriya*
3	रायपुर शहर के व्यक्तियों का आयु वर्ग के आधार पर ई—कामर्स के प्रति जागरूकता पर अध्ययन। *By- Dr.Shweta Mahakalkar, Dr.Devashish Mukherjee*
4	A study on awareness and reference towards print media advertisement of cosmetic products in Kashmir (India) *Irshad Ahmad Bhat*
5	A study of most popular trend in Marketing-Sales promotion & its impact on consumer buying behavior. *By- Namrata Singh, Dr. (Col) T.P.S.Kandra*
6	M-Commerce: Opportunities and challenges in India. *By- Khushboo Patel, Kundan Jangde*
7	Fault Analysis of Electrical Power Logic based on Data mining. *By Ashok Kumar Singh, Neelam Sahu*
8	Image Captioning using deep learning. *By- Mr. Dhirendra Parate, Mr.Sushil Kumar Dubey., Mrs. Minu Choudhary*
9	Optimal Precedence of Attribute Relevance to study student's Appraisal. *by- Dr. Mamta Singh*
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Impact of Emotional Intelligence for Improved Work Life Balance in non-executive employees in Indian Railways, Bilaspur Zone (SECR)

[1]**Anand Kumar Choudhary,** [2]**Dr. S. Srinivas Rao**
[1]Research Student, MATS University, Raipur, Chhattisgarh, India
Email: kchoudhary1805@gmail.com
[2]MATS school of Management Studies and Research (MSMSR), MATS University, Raipur, Chhattisgarh, India
Email: drsrao@matsuniversity.ac.in

ABSTRACT: *The railway department is exposed to a demanding psychosocial work environment, which includes solitary work, limited opportunities for social contact and a heavy responsibility for operating the train (in terms of both safety and adhering to the timetable). The aim of this Research paper is to find out the role of emotional intelligence in work life balance among the working of Indian Railways non-executive employees. They are working for long hours, attending office during holidays, it effects on their personal life, and particularly railways sector employees are unable to manage their work and personal life together. Against this backdrop the paper will try to identify whether emotional intelligence is helpful to manage work life balance. The paper will also focus the relationship between demographic factor and emotional intelligence. Data is collected from 398 employees of Indian Railways Bilaspur zone. Cronbach Alpha is used to test the reliability of questionnaire. Hypothesis testing is done by using Pearson correlation as a non-parametric test. The study reveals that there is a strongly but positive relationship between emotional intelligence.*

KEYWORDS: *Work life balance, Emotional Intelligence, Indian Railways, Demographical Variables.*

INTRODUCTION:

Indian Railways transport mass of goods and passenger from one place to another place at given schedule time. Human Resource Management plays significant role in the development of Indian railways and its employees. This study will focus on the role of Emotional Intelligence in managing Work Life balance of the employees Working with Indian Railways. As the concept Emotional intelligence helps person to achieve success in his personal and professional life. The Emotional intelligence helps to recognize, understand and manage ones and others emotions. Emotional intelligence plays a significant role in the organizations as well as in personal life of employees. it helps individual to understand one's own strengths and weaknesses. The field of study is focusing on the role of emotional intelligence in managing Work-Life Balance. Demographic and social changes affected the life of almost every individual. The South East Central Railway is one of the 17 railway zones in India. It was created on 01.04.2003. Zonal headquartered (South East Central Railways) in Bilaspur and divided in three divisions namely., Bilaspur, Raipurand Nagpur. South East Central Railway play important role in Indian economy.

REVIEW OF LITERATURE:

WORK LIFE BALANCE

Unsocial hours are generally linked to weekend work, evening & night work, and morning shifts that start very early (Colligan and Rosa, 1990; Smith, 1993; Wedderburn, 1967). They may disrupt normal family life (Barling, 1990) and also may impact on parental and partner roles (Barton et al., 1998; Bunnage, 1984; Repetti, 1989). They also disrupt social life and community involvement (Colligan and Rosa, 1990). Unsocial hours may also disrupt normal patterns of sleep, and thereby contribute to fatigue (Duchon et al., 1997; Tepas et al., 1997). According to (Elisa J. Grant-Vallonea& Ellen A. Ensherb, 2001), employees reported higher levels of work interfering with their personal life, than personal life interfering with their work. This inevitably impacts on people's perception of their quality of life and general life satisfaction. (Jeffrey H. Greenhaus et al; 2003) find out for individuals who invested substantial time in their combined work and family roles, those who spent more time on family than work experienced a higher quality of life than balanced individuals who, in turn, experienced a higher quality of life than those who spent more time on work than family. Positive balance implies an equally high level of satisfaction with work & family roles, & negative balance suggests an equally low level of satisfaction with each role (Clark, 2000; Kirchmeyer, 2000, Kofodimos, 1993. Increasing workloads have pressurized employees to demonstrate their commitment to work in more obvious ways (Ishaya &Ayman, 2008). Consequently, a larger part of them have tented to be present at their work place for longer periods of time, thereby reducing the time for which they are available at home. (Hua Jiang, 2012) indicated that, when employees' immediate supervisors respect their subordinates as individuals with unique characters and needs and treat the differently but fairly, employees perceive high levels of trust, commitment, satisfaction and control mutuality, moreover, employees when perceiving that they are treated fairly by their organizations develop quality relationships with their organization.

EMOTIONAL INTELLIGENCE

Emotions provide the means with which we coordinate the diverse mental and physical components required to respond coherently to the world (Gratch & Marsella, 2004). Emotions are a mental and physiological state associated with a wide variety of feelings, thoughts and behaviours. This position ties into Salovey and Mayer's standpoint that emotions are intrinsic to intelligence. They view emotions as organized responses which cross the boundaries of many psychological subsystems, including the physiological, cognitive, motivational and experiential systems. El is one way to re-conceptualize the relationship between cognition and emotion. Adolphs et al., (2002) of dissociable neural systems involved in the knowledge and recognition of emotions which are both key factors in the Mayer and Salovey (1997) definition of emotional intelligence. The primary argument revolves around the question of whether emotions arise from physiological processes in the body that impact on cognition, or whether physiological processes result in emotions (e.g. Lazarus, 1991). Mayer, Salovey and Caruso (2004) conceptualize the relationship between emotion and intelligence in terms of five key assumptions: Emotions share certain essential features that are biologically based. Simpler emotion may combine to form more complex emotions. Emotion may be regulated but not fundamentally altered by display rules. Emotions have the functional purpose of signaling relationships and changes in relationships, real or imagined, between people and their environments. Emotions and cognitions represent different functions of the mind, but interact and are expressed in an integrated form.

WORK LIFE BALANCE AND EMOTIONAL INTELLIGENCE

Abraham Carmeli (2003): found that highly emotional intelligence managers handle work family conflict more carefully than the low emotional intelligence managers. Mikolajczak, Menil & Luminet (2007): found general emotional intelligence employees are highly motivated with their work and family activities. Biggart, Corr, O'Brien and Cooper (2010): pointed out that fathers who are able to regulate their emotions experience less work family conflict. Rangreji (2010): mentioned that high emotional intelligence is having fully work life balance in their respective department and offices. Abendroth and Dulk (2011): concluded that there is a complementary relationship between emotional support and instrumental support in the workplace however only emotional family support has a positive impact on work life balance satisfaction. Laxmi Narayan Sharma (2014):found that the high work life balance is directly proportion to high emotional intelligence of employees. It means extremely high EI bearing employees are having fully WLB in their respective department and offices. Rashmi Bharti, uma Warrior (2015): it was found that emotional intelligence significantly contributes to work life balance on employees. Koubava and Buchko (2015): emotional intelligence as a primary factor to develop an individual's work life balance and work is considered as the major component of overall life satisfaction. V. Swarnalatha, S. Sekar (2017): the study indicates a higher level of emotional intelligence leads to better work life balance and emotional intelligence is an effective way to integrate, enhance and provide better work and family life. P. Shyalaja, Ch. Jayasankara Prasad (2017): emotional intelligence a significant effect on person work life equation and contributes significantly towards maintaining a proper balance in professional and personal life.

OBJECTIVE OF THE STUDY:

- To study the significance of Emotional Intelligence
- To see the impact of demographical factor on Emotional Intelligence.
- To understand the relationship between Emotional Intelligence and Work Life Balance.

HYPOTHESES:

H1: There is no relationship between demographical factor and emotional intelligence.
H1: Emotional intelligence help in increasing work life balance.

RESEARCH METHODOLOGY:

ANOVA is used to identify co-relationship between Age and Emotional Intelligence. Pearson correlation is parametric hypotheses test is used. Mean is calculated as interval scale (Likert scale) is used in the research. Pearson correlation is used to identify correlation coefficient between Emotional Intelligence and work-life balance. The same test used to identify the correlation between variables of Emotional Intelligence like Self-awareness, self-regulation, social awareness and relationship management with Work-life Balance.

Table 1: Reliability Scores

Variables	Cronbach's Alpha	N of Items
Work Life Balance	.819	12
Emotional Intelligence	.640	17
Self – Awareness	.624	5
Social Skills	.331	3
Social Awareness	.172	2

Motivations	.431	4
Self - Regulation	.464	3

DATA ANALYSIS AND FINDINGS:

Hypothesis 1: H1 There is no relationship between age and emotional intelligence.

Table 2: Age of the respondents with mean values

Age of an employees		N	Minimum	Maximum	Mean	Std. Deviation
<20yr	Emotional Intelligence	2	4.47	4.53	4.5000	.04243
21-25yr	Emotional Intelligence	15	2.76	4.41	3.8073	.45622
26-30yr	Emotional Intelligence	45	2.59	4.71	3.9009	.46202
31-35yr	Emotional Intelligence	74	2.71	4.76	4.0681	.41328
36-40yr	Emotional Intelligence	78	3.00	4.76	4.0783	.37808
41-45yr	Emotional Intelligence	83	3.12	4.82	4.0582	.36283
46-50yr	Emotional Intelligence	48	3.12	4.71	3.9552	.30783
51-55yr	Emotional Intelligence	37	2.82	4.76	4.0678	.39021
56-60yr	Emotional Intelligence	16	3.41	4.53	3.9969	.33615

Table 2.1 ANOVA table

ANOVA					
Emotional Intelligence					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.620	8	.328	2.189	.028
Within Groups	58.208	389	.150		
Total	60.829	397			

The result shows that the alternative hypothesis is accepted at 5% level of significance (p=0.028<.05). thus, we can say that age has impact on emotional intelligence.

Hypothesis 1: H1 There is no relationship between department and emotional intelligence.

Table 3: Department of the respondents with mean values

		N	Minimum	Maximum	Mean	Std. Deviation
Commercial	Emotional Intelligence	39	3.71	4.82	4.2892	.26672
Education	Emotional Intelligence	13	3.76	4.65	4.2723	.24025
Electrical(General)	Emotional Intelligence	22	3.12	4.76	3.9286	.39023
Elect(OP)+ Mech(LOCO)	Emotional Intelligence	78	2.71	4.76	3.8888	.40855
Electrical(TRD)	Emotional Intelligence	21	3.65	4.71	4.1333	.30611
Engineering	Emotional Intelligence	34	3.29	4.53	4.1318	.28985
Medical	Emotional Intelligence	14	3.12	4.65	4.1014	.44057
Operating	Emotional Intelligence	93	2.59	4.71	3.9233	.42912
Personal	Emotional Intelligence	15	3.12	4.65	4.1853	.36314

S&T(Signal)	Emotional Intelligence	18	3.35	4.71	3.9656	.32143
S&T(Tele)	Emotional Intelligence	16	3.65	4.59	4.1281	.28715
C&W	Emotional Intelligence	35	3.12	4.76	3.9880	.38038

Table 3.1 ANOVA table

ANOVA					
Emotional Intelligence					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.513	11	.683	4.945	.000
Within Groups	53.316	386	.138		
Total	60.829	397			

The result shows that the alternative hypothesis is accepted at 5% level of significance (p=0.000<.05). thus, we can say that department has impact on emotional intelligence.

Hypothesis 1: H1 There is no relationship between education and emotional intelligence.

Table 4: Education of the respondents with mean values

		N	Minimum	Maximum	Mean	Std. Deviation
10th	Emotional Intelligence	71	2.59	4.76	4.0252	.40611
12th	Emotional Intelligence	86	3.12	4.82	4.0865	.35105
Graduation	Emotional Intelligence	97	2.76	4.76	4.0766	.38959
ITI	Emotional Intelligence	53	3.12	4.76	3.9272	.41360
Diploma	Emotional Intelligence	70	2.71	4.76	3.9264	.39505
BE	Emotional Intelligence	21	3.12	4.65	4.1090	.36429

Table 4.1: ANOVA table

ANOVA					
Emotional Intelligence					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.919	5	.384	2.554	.027
Within Groups	58.909	392	.150		
Total	60.829	397			

The result shows that the alternative hypothesis is accepted at 5% level of significance (p=0.027 <.05). thus, we can say that Qualification has impact on emotional intelligence.
Hypothesis 1: H1 There is no relationship between experience and emotional intelligence.

Table 5: Experience of the respondents with mean values

		N	Minimum	Maximum	Mean	Std. Deviation
<5yr	Emotional Intelligence	84	2.59	4.71	3.8980	.44760
6-10yr	Emotional Intelligence	76	2.82	4.76	4.0511	.40895
11-15yr	Emotional Intelligence	73	3.29	4.76	4.0708	.37212
16-20yr	Emotional Intelligence	70	3.12	4.59	4.0600	.33485
21-25yr	Emotional Intelligence	37	3.12	4.82	4.0997	.39128

26-30yr	Emotional Intelligence	31	2.82	4.65	3.9935	.34537
>30yr	Emotional Intelligence	27	3.35	4.59	4.0656	.33588

Table 5.1: ANOVA table

ANOVA					
Emotional Intelligence					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.928	6	.321	2.133	.049
Within Groups	58.901	391	.151		
Total	60.829	397			

The result shows that the alternative hypothesis is accepted at 5% level of significance (p=0.049<.05). thus, we can say that experience has impact on emotional intelligence.

Hypothesis 2: H1 Emotional intelligence helps in increasing work life balance.

Table 6: Descriptive Statistics of Emotional Intelligence and work life balance

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Self- Awareness	398	2.00	5.00	4.1688	.57473
Social Skills	398	2.00	5.00	4.3379	.58378
Social Awareness	398	2.00	5.00	4.1083	.59093
Motivations	398	1.75	5.00	3.7933	.69374
Self- Regulation	398	1.00	5.00	3.8049	.79732
Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Work Life Balance	398	2.08	5.00	3.8443	.74874
Valid N (listwise)	398				

Table 7: Co- relation between emotional intelligence and work life balance

Correlations			
		Emotional Intelligence	Work Life Balance
Emotional Intelligence	Pearson Correlation	1	.495**
	Sig. (2-tailed)		.000
	N	398	398
Work Life Balance	Pearson Correlation	.495**	1
	Sig. (2-tailed)	.000	.000
	N	398	398
**. Correlation is significant at the 0.01 level (2-tailed).			

The positive and strong correlation coefficient between emotional intelligence and WLB is significant (r=0.495, p= .000

< = 0.05) at 5% level of significance.

FINDINGS:
- The moderate Self Awareness (Mean=4.1688, SD=0.57473) indicate that the employeesare not aware about their emotions in the professional life.
- The high Social Skills (Mean=4.3379, SD=0.58378) indicate that the employees are generate own skills in the work place.
- The moderate Social Awareness score (Mean=4.1083, SD= 0.59093) indicates that most of the employees are socially welfare and respect and like others at the workplace.
- The social Motivations (Mean=3.7638 SD=.79323) indicating the employees are not motivating for the job.
- The social Self Regulations (Mean=3.7933 SD=.69374) indicate that the employees to aware to generate new ideas.

- The high work life balance score (Mean=3.8443 SD=.74874) indicate that respondents probably needs to do more to improve work life balance.
- The moderate positive correlation coefficient between EI and WLB (r=0.495, p=0.000) indicate that Emotional Intelligence does not affect work life balance in the respondents.

RESULTS AND SCOPE:

The study found that emotional intelligence and work life balance has significant positive relationship. It also focusing on the relationship between age and emotional intelligence as there is significant relationship between age and emotional intelligence, significant relationship between department and emotional intelligence, there is no significant relationship between qualification and emotional intelligence and there is no significant relationship between experience and emotional intelligence. The results will be more accurate if the sample is more.

CONCLUSION:

Past studies found a positive relationship between emotional intelligence and work life balance. organizations need to introduce new environmental modules for emotional intelligence to boost the behavior and skills of Indian Railways employees. Wherever staff carry lots of pressure in intellectual job in different departments. Managing work life is important for job satisfaction and performance at work.

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The Impact of E-Commerce and Big box retailer on local retailers: A Case study of Shreeji Super Bazaar in Bhilai

[1]Samir Jaiswal, [2]Dr. Seema Jaiswal
[1]Asst. Professor, Govt. Naveen College Bori, District Durg
[2]Asst. Professor, Govt. JLN,Arts & Science PG College District, Bemetara

Abstract: Bhilai Durg is popularly known as the twin city of Chhattisgarh with the rapid urbanizations, Educated populations more than 10 lacs, it has attracted all most all the big box retailers including D Mart, Vishal Megamart, Big Bazaar and around 12 super markets operating in Bhilai City. The market has become so competitive due to several traditional retailers in the city, Big box retailers like D Mart made the market competition intense and competition is also given by   E-Commerce retailers like Flipkart & Amazon by their daily deals and shopping festivals. Few Super Markets have closed their operation in the city and the traditional retailers are also facing the same situation. In the Present preparation of the Case study of Shreeji Super Bazaar, we have taken a sample of 100 customers and the owner is interviewed simultaneously. along with respondents were interviewed to get the inputs. which is doing pretty well in the market by practicing some strategies to sustain in the market and improving the profitability of the business.   Tax-free goods that is an important part of the entire business and there is a good possibility to earn revenue out of it because there is a big price gap between loose food grains and branded food grains. Procurement of food grains is one of the vital parts of the business and if branded, packaged and labeled by the store, the store can generate a good amount of revenue. Local labeled brands can be shortlisted and marketed based on the quality and price offered. Courteous and friendly behavior also reflects one's store image.
Keywords: E Commerce, Retail, Super Market.

Modern retail (or organized retail, or big box retail) was the new thing, but the going hasn't been easy for companies in the business that have been forced to cut, chop, merge and change strategies to cope with issues such as inefficient supply networks, high rents, and increasing competition from well-funded e-commerce firms.

Significant News in the Retail Industry:

Future Retail operates around 350 stores spread over 11 million square feet of retail space. Bharti Retail currently operates a network of over 200 Easyday stores in multiple formats across 114 cities. The combined entity will have annual revenue of 15,000crore, making it the country's largest hyper- and supermarket chain.

In March, Aditya Birla's value retail unit Aditya Birla Retail Ltd acquired Jubilant Retail's Total hypermarket chain in Bengaluru. In November, Future Group acquired grocery chain Nilgiris.

India also allowed for up to 51% overseas investment in supermarkets and hypermarkets (termed multi-brand retail), but only in states that were amenable to foreign-owned outlets.

The resulting confusion resulted in the exit of Carrefour SA and the break-up of the Bharti-Walmart joint venture. Wal-Mart Stores Inc. remains in India in the so-called cash-and-carry segment, or wholesale retail, which allows for 100% FDI. The current government is opposed to any foreign investment in hypermarkets and supermarkets.

E-commerce companies, flush with venture capital, are offering consumers huge discounts. Think India. Think Retail, a February report published by property advisor Knight Frank India Pvt. Ltd and lobby group Retailers Association of India, estimated that the share of modern trade in retail would slip from 17% in 2013 to 13% in 2019, while that of e-commerce companies would jump from 2% to 11% in the same period

The opportunity:

The retail opportunity in India is big. The overall retail market will double from around $500 billion this year to $1 trillion in 2020, another report by Boston Consulting Group and Retailers Association of India said.

"Older and larger retail companies are behind the curve of online retail companies," said Harish H.V., partner at audit and consulting firm Grant Thornton India Llp. Such firms are restructuring or consolidating their retail operations to gain financial muscle and scale, he added.

The Scenario in Bhilai Durg Chhattisgarh: The Case study of Shree ji Super Bazaar in Bhilai:

Bhilai Durg is popularly known as the twin city of Chhattisgarh with the rapid urbanizations, Educated populations more than 10 lacs, it has attracted all most all the big box retailers including D Mart, Vishal Megamart, Big Bazaar and around 12 super markets operating in Bhilai City. The market has become so competitive due to several traditional retailers in the city, Big box retailers like D Mart made the market competition intense and competition is

also given by   E-Commerce retailers like Flipkart & Amazon by their daily deals and shopping festivals. Few Super Markets have closed their operation in the city and the traditional retailers are also facing the same situation.

History & Details of the Store: They Started business with Swadeshi marketing in 2003 in Sector 10 above Dave brothers in 1st floor but after working for 7-8 years felt that the vision of Swadeshi marketing is misguided and then partitioned the stores in to two parts, one with the swadeshi and the other with the sale of general merchandise. Then in the year 2009-10 they started Shreeji Super bazaar in Nehru Nagar after gaining the experience from the sales of general merchandise and Swadeshi marketing.

Place &location: Since the super bazaar is located at the Center of the city and it is easily approachable to all the customers, easy parking facility, more than 3000 - 5000 families are easily approachable.

Staff Selection : Generally, they recruit female and experienced staff, as the owner felt that the women employees are more honest and proficient at their work and they are smart enough to handle any client's grievance. They work with team spirit and customer satisfaction is the ultimate goal of every sales woman.

Philosophy of the store: The Owner truly believes that the sense of ownership is one of the crucial factors to improve the store and transferring the ownership to all the employees is the philosophy of their store and if the profit improves profitability they will also gain in the same fashion. No sales target is assigned to the salesperson. Store performance and incentives were transparent to all employees.

Challenges of the store : Operating cost is one of the major challenges that the store is facing nowadays, the store is on rent and the operating expenses include staff expenses, electricity cost, maintenance cost is high . Competition from the nearby super bazaar, Di mart, Big Bazaar, and e-tailers are also major challenges that the store is facing.

In the Present preparation of the Case study of Shreeji Super Bazaar, we have taken a sample of 100 customers and the owner is interviewed simultaneously along with respondents were interviewed to get the inputs. which is doing pretty well in the market by practicing some strategies to sustain in the market and improving the profitability of the business.

The Following **Strategies** were adopted by Shreeji Super Bazaar to beat the competition and to sustain in the market and becoming profitable.

Focusing on tax free goods : Currently, the store is focusing on Tax-free goods under GST such as Rice, pulses, wheat, spices, and many packaged commodities, they are sourcing from the nearby producers and getting it packaged and selling it by their own private label name in this way they are improving their profitability.

Promoting Private local Brands: There is a good margin between branded and private label products provided one delivers the quality products. first work on the local brand offering quality food grains , spices etc.   short list them procure them and sale them since there is good price margin between these local brands and established brands .

Excellent After Sales Service : If there is any after sales grievance then this issue should be resolved always in favor of customer and thus made the customer happy . this is the time when one can establish bond with the customer.

Helpful & Courteous Staff :The Staff only have female staff and thus they tried their best to help the customer in case of any kind of commodity if not found within the store .

No Advertisement & Promotion: They rarely spend a penny in advertisement and promotion as they feel, the cost incurred on advertising can be passed on to the customer in the form of discounts and gifts. They generally believe that Buzz marketing or word of mouth plays a significant role in getting confidence with the customer. Still they circulate their offers through sms to all their valued customers.

Loyalty Programs: The Loyalty programs included in their store is Swabhiman loyalty card to retain customer in which the registration fees is Rs. 50 and if one purchases Rs 3,000 monthly from their stores they will get 4% discount on each and every item and after continuous purchase of 12 months of value Rs 3,000, the customer will get the 13th month Rs 3000 value of purchase free of cost. In this scheme the overall discount that the customer avails come to 15-18 %. at present, they have around 90 customers who are using swabhimaan loyalty cards and they have set a target to achieve 500 customers by 2021.the owner himself and the salesperson also educate the customer regarding the new products, schemes and benefit they will get while shopping at Shreeji Super Bazaar.

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A study on awareness and preference towards print media advertisements of cosmetic products in Kashmir (India)

Irshad Ahmad Bhat
Research scholar, Department of Business Administration
Awadhesh Pratap Singh University Rewa, (M.P.)
E-mail: irshadsirg@gmail.com

Abstract: *The cosmetic print advertisement is an exercise by the sellers or manufacturers of the cosmetic products to transmit a message about their product to the consumer. In this manner it initiates the importance to evaluate whether the cosmetic print advertisement is able to make people aware and attract the attention of the consumers. That is to say particularly to determine the sensitiveness of respondents towards cosmetic print advertisement. Print media entertains and inform prospects at the same time and focuses on appropriate attitudes to create product awareness of cosmetics. The message of the advertisement is very necessary to study the influences of these beauty advertisements on the consumer behaviour. This study examines the awareness, ability to perceive an effective message to get attention towards cosmetic print advertisements and an action of consumers towards the impact of beauty product advertisements. The current study was carried out in both rural and urban areas.*

Keywords: *Print advertising, Cosmetic products, Effective message, Awareness and preference.*

Introduction:

The conceptual understanding communicates various dimensions about the perception and sensitiveness of respondents towards print advertisements. The consumer values and goals are attached with their purchasing purpose and activity. Therefore, it is very important to find and highlight the ability of advertisements published in different kinds of print medium in creating awareness and attention among masses. The ultimate aim of cosmetic print advertisement cannot properly draw a special attention without assessing the print media. Keep all this in mind this view point became one of the objectives for proposed work to check which print medium advertisements makes consumers aware and gets their attention related to cosmetic products. The survey was carried both in rural and urban areas of Jammu and Kashmir, the northern most state of India, where people remained akin to print media on regular basis. To assess this objective of the study, the question regarding different media of advertisement and its contribution in gaining the attention of the readers was mentioned in the questionnaire. The respondents were given various options like newspapers, magazines; hoardings etc and they had to indicate which medium best satisfied them to be aware about the various cosmetic products and brands. Indian cosmetics production is majorly categorized into skin care, oral care, fragrances, hair care and color cosmetics segments. The cosmetic sector in India is scattered as it grows and develops.

Literature review:

After studying the previous literature related to print advertisements of cosmetic product. It is found that print media has invited a lot of research across the globe. Some individual studies have been undertaken with specific purpose mostly suiting the research paper. According to Lefa and Laroche (1), advertisement receives more favorable responses when competing advertisement contain culturally incongruent appeals and neutral arguments. Rik Pieters et.al (2), proposed a statistical model comprising sub models for two key measures of visual attention to elements of the advertisement, attention duration and inter-and-intra-element saccades. Dalip Raina, Kritika Khujuria (3) explores the effectiveness of advertising in India in the current scenario. The study examines the motive behind purchase of a product, major component of the advertisement, and to what extent the advertisements carry a relevant and believable message. Harald J, et al (4) maintains how media coverage of a price war affects customer, retailer, and investor reactions over time. Jonathan Hasford, et al(5) It develops an affect-as-information model to explain how targeted emotions used in persuasion can influence unrelated products and brands that are presented nearby. Ghulam Shabbir Khan Niazi,et al(6) examined that consumer purchase those brands from which they are emotionally attached and revealed results in the field of buying behavior of consumers' response. Samar Fatima, Samreen Lodhi(7) analyzed two variables such as consumer awareness and consumer perceptions will motivate the consumer to buy a certain product, as there is a positive relationship present in between them. Ghachem (8) examined online branding in Newspapers. Gul & Islam (9) studies the adoption of social media by online newspapers of Kashmir to make the news reading as a two way communication and how it has helped print media channels to reach readers all across the world. Mansor et al, (10) in their study, they stated that now a day's cosmetics is one of the most important factor for attractiveness to consumers. Krishnan et al, (11) examined the purchase pattern of cosmetics among consumers in Kerala analysed that usually male consumers tend to buy and take decision of their brands on their own. Kim, et al (12) studied customer behaviour in the men's cosmetics market, understands the impact of theories of self-concept on the consumer buying of male cosmetics

and concluded that there exist a strong relationship between self-concept and purchasing pattern. In addition to the above research papers, some articles provided an insight about print media advertising. In an article given by Branding agency Millward Brown, found that human brain observe the absorbing and storing visual information is more active in respond in print advertising than other media. Another article given by neuro marketing firm "true impact" has revealed that a person needs 21% more cognitive effort to absorb digital information than print media. The article also reveals that print advertising can successfully help in brand recall up to longer time than digital media. One more study was conducted by U.S. postal service; they found print media outperform digital media nearly in every area. They revealed print material is clear winner in memory, valuation, speed, review, desirability, stimulation and confidence. They found that digital media doing good in initial attention of audience. All these articles were given in Lucid press (13).

Objectives of the study:- In addition to examine the awareness towards print media ads in promotion of cosmetic products in the market. The aim of the research is to examine preference towards print advertising media in Kashmir.

Hypothesis: Ho: There is no significant difference on level of awareness and preference towards cosmetic print advertising with respect to gender.

Methodology: Descriptive research design has been used to know the awareness and preference among consumers towards print media advertising in promotion of products in the market. It has been used because it is typically concerned with determining frequency with which something occurs. A structured undisguised questionnaire is used to collect information from three hundred (300) persons from Srinagar, Baramulla and Anantnag districts of Union territory of J&K (India) with related to the above objectives.

Methods of data collection: The data collected for the study includes both primary and secondary data in order to attain the objectives of the study. The primary data is collected by using questionnaire. Apart from this information secondary sources are collected from websites, clipping from newspapers, magazines, journals and books.

Reliability Statistics

Cronbach's Alpha	N of Items
.637	6

Data analysis and discussion:

In order to configure and demonstrate the above set objective, I have collected and assessed the data through a pre-defined questionnaire made easy and convenient for subjects. Eventually the different medium of information, which I chose are as: Newspapers/newsletters, Magazines, hoardings/billboards, brochures/pamphlets. The first query that finds mention in the questionnaire is about various media options being accessible to the distributors inviting attention towards cosmetic products. This five point Likert scale was drafted to denote awareness of the respondents and thus mentioned as extremely aware at point (1) and not at all aware at point (5).

The below mentioned table denotes the level of awareness among the respondents about advertisements in selected print medium of advertisements used for cosmetic products.

Frequency of respondent's awareness and preference about print advertising of cosmetic products:

S.No.	Print Medium	Extremely aware	Very aware	Moderate aware	Slightly aware	Not at all	Total	Mean	St. Deviation
i.	Newspapers/ Newsletter	254 84.7%	14 4.7%	11 3.7%	8 2.7%	13 4.3%	300 100%	1.37	.995
ii.	Magazines	62 20.7%	175 58.3%	24 8%	17 5.7%	22 7.3%	300 100%	2.21	1.065
iii.	Hoardings/Bil l boards	105 35%	75 25%	90 30%	13 4%	17 5%	300 100%	2.21	1.138
iv.	Brochures/ Pamphlets	166 55.3%	60 20%	25 8.3%	26 8.7	23 7.7%	300 100%	1.93	1.294

    i.   **Newspapers/Newsletters:** In this connection out of 300 respondents 84.7% are extremely aware about newspaper advertisements containing information about cosmetic products. However, thirteen respondents figured at 4.3% were found totally unaware about the newspapers and the advertisements about cosmetic products contained in them. The mean value and standard deviation in this variable is 1.37 and .995 respectively.

    ii.   **Magazines:** The above mentioned table (1.1) also contains the data related to the level of awareness of magazine advertisements about cosmetic products. The respondents were asked to rate their awareness level

about beauty magazines as they mostly contain the advertisements related to beauty products. The frequency and percentage about magazines is presented in the following table. The large numbers of respondents (175) are very aware about the cosmetics advertisements presented in the magazines, which composed 58.3% of the population of 300 respondents. In fact the study also found that 22 respondents are not aware and attentive at all about the magazine advertisements of cosmetics. The mean value and standard deviation in the magazines is 2.21 and 1.065 respectively.

iii. **Hoarding/Bill boards:** One more important kind of print media advertising is hoardings/bill boards placed in various locations across the country and I took the same parameter for my study to check the awareness and attention towards advertisements presented in hoardings especially the advertisements about the cosmetics. A large outdoor board for displaying suggestive advertisements on bill boards are shown, it is a large panel designed to carry advertisement about the products or services. The companies use this kind of advertising mostly in the initial stages of product promotion. There are 105 respondents who are extremely aware in the sample of 300 respondents which represents the 35% of the said population. Seventy five respondents were very aware which counts the 25%of the selected samples. The most important point here is that large number of respondents said they are moderately aware about hoarding advertisements of cosmetic products which counts 30% of 300 respondents. The one more fact of the study is that 17 respondents are not aware and attentive at all towards the same. The mean value and standard deviation in this variable is 2.21 and 1.138 respectively.

iv. **Brochures/Pamphlets:** Brochures are like small book containing information and pictures about products and services, we can say these are the pamphlets or small booklets used to be tied together smartly. I took this informative document as one of the print medium variable to ascertain the awareness level among selected sample size and the results are presented in the given table. Brochures/pamphlets are considered as one of favourable print medium used by people in order to get the more information. Cosmetic product companies are using such print medium to provide treatable and effective dosage information for the people. When I asked my selected respondents about the awareness of these brochures/pamphlets cosmetic advertisements 166 respondents were extremely aware which are the 55.3% of the total population of 300 persons, 8.3% of the population were moderately aware and 8.7% are slightly aware. However 23 respondents were not aware at all which tallied them to 7.7% of the total population. The mean value and standard deviation in this variable is 1.93 and 1.294 respectively.

Awareness and attention of print media advertising related to cosmetic products with respect to age tested with ANOVA.

The relationship between the levels of consumer awareness towards print media advertisements regarding cosmetic products with respect to age is presented in the following ANOVA table. The mean score of four different print media were added and clubbed together through transform and then compute variable option given in SPSS and finally a new variable was made as print media and accordingly the set null hypothesis testing was carried out through SPSS.

Hypothesis: Ho: There is no significant difference on level of awareness and preference towards cosmetic print advertising with respect to gender.

Descriptive analysis of print media

Age group	N	Mean	Std. Deviation	Std. Error
19 - 25 yrs	75	1.8347	.27386	.03162
26 - 35 yrs	75	1.5253	.58704	.06779
36 - 45 yrs	75	1.4853	.56871	.06567
Above 45 yrs	75	1.3307	.40469	.04673
Total	300	1.5440	.50793	.02933

ANOVA testing of the awareness and attention of print media

Print Media	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	10.034	3	3.345	14.753	.000
Within Groups	67.105	296	.227		
Total	77.139	299			

Hypothesis testing: It is observed from the above table that the mean scores of print media towards advertisement awareness and attention towards cosmetic products for four different age groups vary between 1.33 and 1.83 which indicates that there is significant difference in mean scores for four different age groups. Mean scores of selected print media is also presented in mean plot.
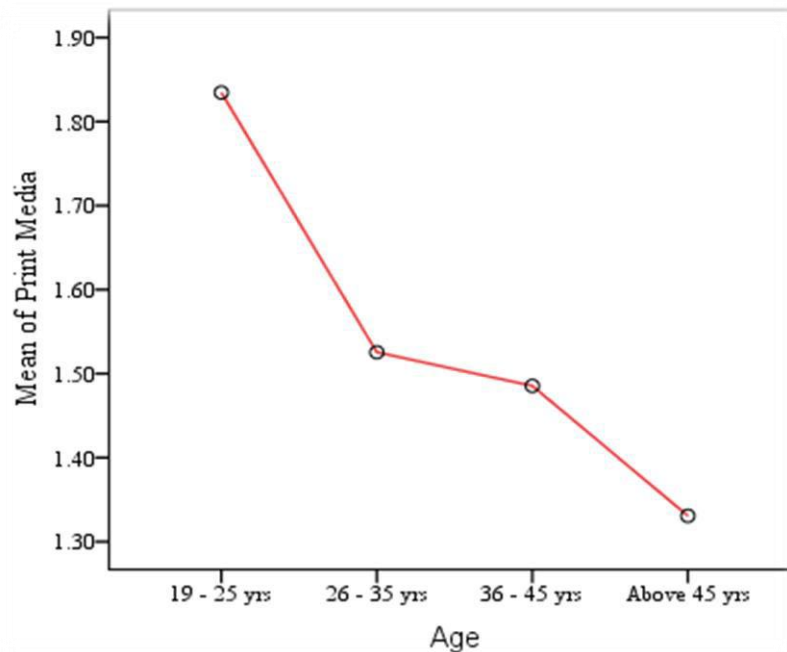
The ANOVA table indicates that the calculated value of F is 14.752 which is higher than tabulated value of 2.60 at 5 % level of significance with degree of freedom being $V_1 = 3$ and $V_2 = 296$ thus the null hypothesis is rejected.

The four variables of print media such as newspapers, magazines, hoardings/bill boards and brochures/pamphlets, the value of significance is .000 which is significant as its p value is less than 0.05 ($p < 0.05$) and this indicates that overall null hypothesis is rejected in all variables and can be statistically concluded that there is significant difference on level of awareness and preference among consumers towards print advertising of cosmetic products in Kashmir with respect to gender.

Conclusion:

After the abrogation of article 370 by the central Government, the print media remained the only option for marketers in J & K to advertise their products as the other means were blocked by the Govt administration concerning security reasons. Though in slumber the Print media is not dead, the research findings will facilitate the news paper industries and marketers in understanding the effectiveness of print media. The study will help the newspaper and magazines industries in knowing various factors that affect consumer behavior through print media. Cosmetic print advertisement acts as an influencer in selecting cosmetics for common diseases of skin, hair and oral and creates need up to some extent and the message of print advertisement make aware to use the cosmetic products. Print media has a long standing and loyal readership, means people may read home town news paper daily or can subscribe to specific magazines of cosmetic products. Print media ads especially magazines are preferred most by consumers as this is high involvement medium. Finally we can say a print media ads contain more information about the cosmetic products than other media and can be promoted through locally. The paper highlighted the preference and awareness of print media advertisements and its effect on consumer behaviour in digital India.

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STRESS MANAGEMENT IN THE WORKPLACE

Dr. Shivangi Dwivedi

Assistant Professor, Commerce

Gyan Ganga College of Excellence, Jabalpur (M.P.)

Email id- dwivedi_shivangi@yahoo.in

ABSTRACT :

      Stress is a feeling that happens to anybody at any moment of time. It can give positive or negative impact on job and can cause illness, physically and mentally. Stress is like a two edged sword that may benefit or harm the employees. It was realized that rules and regulation cause less deeply felt stress. Managers experienced a high level of positive stress and its consequences very soon. Managers are thus greatly motivated with a desire to succeed in a shorter time. The organization vision, mission, and strategy are the principles to be complied by all. It is in the self interest of the companies to provide facilities and time for their employees and exercise rather than becomes ill and probably lead to miss work. However employees first need to learn to recognize the signs that indicate they are feeling stressed out and employer need to be aware of the effects that stress has on their employee's health as well its impact on company profit making efficiencies.

Keywords: illness, consequences, motivated, signs and profit.

INTRODUCTION:

      Stress is a part of life and usually people are surrounded by it. They can easily deal with stress only if they knew what is stressing them and how they can respond to it. Common definition of stress is,"Physical, mental, or emotional strain or tension". It is physical, chemical or emotional factor that causes behavioral change or mental unrest. While elimination of stress is really not possible but can be manage in a better way. People who are with strong social support network report less stress. Stress in the work place reduces productivity, increases management pressure and make employees ill. It is a serious risk of litigation for all employers, organization and the people concerned with them. So they are clearly strong economic and financial reasons for organization to manage and reduce stress at work. Stress management are directly related to personal well being and specifically to workplace well being. Its management is relevant to modern work and management. When an individual is in a situation where he can placed under pressure and need to concentrate then this situation often lead to stress and of course leaving unable to concentrate and causing to shutter and choke.

      However, there are no of situations which are generally categorized as stressful events and include financial worries, work overload, peer pressure not having enough time with work etc.

SIGNS OF STRESS:

1 Migraine.	**2**. Fatigue.
3. Hypertension.	**4**. Feeling overhead.
5. Headaches, other pains.	**6**. Alcohol abuses.
7. Sleep disturbance, insomnia.	**8**. Emotional outbursts
9. Upset stomach and indigestion.	**10**. Violent.
11. Anxiety.	**12**. Dizziness.
13. Anger, irrability.	**14**. Depression.
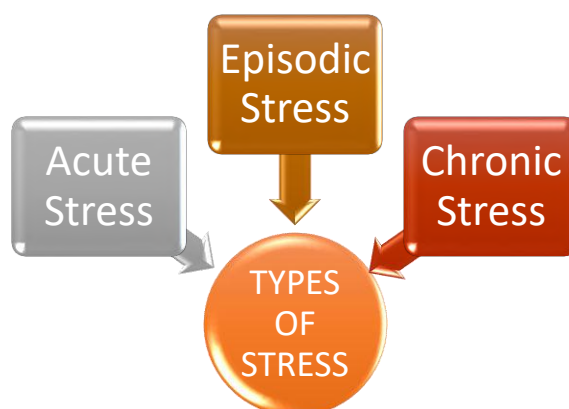
ACUTE STRESS

It is a most common form of stress and is short lived. It comes from the demand and pressure of past and the near future. It can be of positive outlook like to motivate. It is thrilling and exciting of short does but also too much tiring, exhausting and mentally draining. Short term acute stress can result anxiety and depression, tension, headaches, upset stomach but it does not carry any extensive loss but it does not carry any extension damage that can cause over the long term. It is treatable and manageable.

Symptoms

- Elevation in heartbeat.
- Anger or irrability.
- Rapid heart beat
- Depression.
- Sweaty palms, cold hands or feet.
- Back pain.
- Dizziness.
- Diarrhea.
- Constipation.
- Jaw pains.

EPISODIC ACUTE STRESS

Episodic acute stress arises within the people who live in disordered, crisis and chaotic lives. It emerges in people who are generally suffered from acute stress frequently. They are in a rush but always late often they describe themselves having lot of nervous energy even sometimes their irrability come across as hostility. The work place becomes very stressful place for the people who are suffered from episodic acute stress. These people generally belong to Type A personality group sufferers can be fiercely resistant to change. Only the promise of relief from pay can keep them in treatment and on track in their recovery programme.

Symptoms

- ➢ Migraine.
- ➢ Heart disease.
- ➢ Headaches.
- ➢ Over aroused.
- ➢ Hypertension.
- ➢ Short tempered.
- ➢ Chest pain.

CHRONIC STRESS

Chronic stress is totally different from acute stress. It is grinding stress which is long term often seen in individual who are suffering from unending poverty, unhappy marriage, with no way out and others. It destroys bodies, minds and lives. It is the stress of poverty of dysfunctional families. It can stem from traumatic childhood experience that causes stress and view the world as a threatening place to lives in. people who get used to it. The symptoms of chronic stress are difficult to treat and may require medical and behavioral treatment. It can lead to suicide, violence, heart attacks stoke and even cancer.

BURNOUT

It is a response to chronic stress. It is in relevant today's workplace. It is a complex physical, mental and emotional reaction to constant levels of high stress. There are few jobs which require attending to the emotional needs of other and can lead to emotional or physical fatigue. It can occur in any job where an employee feels over work load, underappreciated, concerned about job security and resentful about duties that are not commensurate with pay. It can result in depression and unhappiness that can threaten the job, relationship and health.

TRIGGERS OF STRESS

External

- Major life changes.
- Environment.
- Unpredictable events.
- Work place work load etc.

Internal

- Fear.
- Lifestyle.
- Childhood belief.
- Past traumas.
- Genetic.
- Personality.

SOURCES OF STRESS AT WORK PLCE

* **Uniqueness of job**

- Physical environment at work place.
- Working hours.
- Workload.
- Autonomy.

* **Role in an organization**

- Role conflict.
- Lack of clarity about expectation.
- Level of duties and responsibilities.

* **Concerned with career development**

- Fear towards job security.
- Job satisfaction.
- Under/over promotion.

* **Interpersonal relationship at workplace**
- Supervisors.
- Peers.
- Co-workers.
- Violence, harassment etc.

* **Organization climate**
- Importance in decision making.
- Communication flow or pattern.
- Management style.

How to reduce stress

- Make small changes in life style.
- Changes in behavior and outlook.
- Control emotions and thoughts.
- Seek help.
- Regular time for exercise and relaxation.
- Well planned set of task or activities.
- Spend time with friends and family.
- Share thoughts, feelings and problems.
- Meditate regularly.
- Counseling.
- Make weekend unforgettable.
- Indulge in hobbies.
- Self talk.
- Avoid using alcohol or other drugs to cope.
- Listening music, dancing, chatting and walking.
- Humor.

- Group therapy.

CONCLUSION:

It is generally believed that stress is okay sometime when lead to positive change but when stress occurs on the amount of mental and physical change of an employee it must be avoided.

A large part of problem of stress related mental illness is that there is a general lack of understanding, management and skills as well as action or mental issue in the work place. There remains a stigma associated with mental illness and pay, prevent employees to seek support and help from peers, subordinates and co-workers. Employees may even fear of losing their jobs. Personality differences, gender differences, age and social support sounds to be the prominent factors in determining how well an employee cope up with work place stress. It needs to recognize that mental illness is a serious crisis for employees and it demands a serious response from institution or company.

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"A Study on most popular trend in marketing- Sales Promotion and its impact on Consumer Buying Behaviour"

(Study based on Future Apparel Stores in C.G.)

Namrata Singh
Ph.D. Scholar
Barkatullah Uniersity, Bhopal, M.P.
E-mail: namratagain@gmail.com

Dr. (Col.) T.P.S. Kandra
Director, MCEE
Bhopal, M.P.
E-mail: tpskandra@gmail.com

Abstract: *Marketing theories are incomplete without 4P's of marketing strategies. All strategy has different use and importance in PLC. Here as a researcher I am discuss about the impact of Sales Promotion techniques by Future Group on Consumer Buying Behaviour especially Apparel Store (Central and Brand Factory). Presently fashion goes much beyond the ramp it reflects consumers' mood. Fashion lies in new demographics and new expressions, new festivals and new occasions, new rituals and new role models. In a world where a carefully curated self goes much beyond the selfie and showing off has never been easier and more celebrated. Researcher wants to know about consumers' buying behaviour in apparel stores. Main objectives are- 1. To understand the impact of sales promotion on consumer's buying decisions. 2. To identify the role of store display, discounts coupons and free sample in order to enhance brand switching and purchase acceleration. 3. To know relationship between factors that affects consumer's buying behavior. Research methodology for the purpose of collection of primary data it will be based on Questionnaire and Schedule Method. Questions related to the demographic profile of consumer and their basic information which will be based on semantic differential scale. Population can be defined as individual's conditions to which that population is exposed. The population of application for this study will randomly select from future group's retail outlets in C.G. (Bhilai, Raipur). Sample size will be 200 walk-ins and primary data for the purpose of the study undertaken from questionnaire and observation will be taken. Sources of secondary data for the inputs for proposed research will be taken by various articles published in marketing, magazines, newspapers and other promotional journals. Observations will provide the information for measure the number of footfalls, quantity of purchase, switching behaviour. Through the various questions researcher will collect data and through probable sampling technique and X^2 statistical tool and analyze data. With the help of these calculations, research will prove the hypothesis one by one. The results will help implication for store manager, especially with respect to the promotional offers for food products. The results may show that consumers are always sensitive towards price change, are ready to stock goods and accelerate their purchase decision with a ray of saving.*

Keywords: *Sales Promotion, Buying behaviour, social surroundings, psychological factors, techniques of sales promotion.*

1. Introduction:

In current scenario where business environment is continuously expanding; Buyers' are more aware about product quality, price and services provided by the marketers. Buyer has become the king in the market. They have hidden but powerful autonomous operating power. They seems enjoying a lot of freedom of buying decision. Sometimes buyers' in the position as influencer and other hand marketers keep trying to influence them through many techniques; such as sales promotion, advertisement. A situation where buyers demand the products from marketers it comes pull strategy of marketing and the another situation when marketers trying to create demand by pushing dealers to increase/create demand it called push strategy of marketing. As a result marketer uses and apply several techniques which are help to make buyer attention successfully. As a result buyer uses their power of buying decision freely. And as per their degree of satisfaction they attract or distracts.

Background of social science in International market buyers' has become the king. They can behave according to their individual freedom and power. He enjoys his great opportunity of freedom at the time of buying. Shoppers' are lying in a position to attract/influence by producers or sellers capacity, characteristics, and constituents of merchandise, cost and after-sales aids and supports, amongst the alternative goods and services. As an outcome of the seller's dose not any more endures "seller's markets", its turn into "buyers markets". With the boom in Indian retail sectors, several players came into market with totally different retail formats. It results though competition between marketers, producers and retailers. One thing has to remind in our mind that Indian Customers are very sensitive regarding price of the products and services. Every buyer is too differently behaved at the time of their buying due to sales promotion activities. As a real evaluation of the effect of the Sales publicity on buyers behavior remains confused into the marketers/merchants. This research carried out will help in finding out the impaction of the publicity on selling activities by Future Group on Consumers' buying behavior. Present scenario is all about the systematized retailing zones that is a substantial extension in the Economy of Indian. It is one

of the largest sectors in India and also attracts the new investors especially from private sector. Currently, the Indian retail sector is fully captured by 12 million retailers. Small retailers run small retail outlets and bigger retailers' runs large retail outlets vice versa (covered below 50 sq. ft. in sizes) including handcrafts. These stores area unit unfold across the country in over five thousand, cities and six lacs, villages. Indian retail market is capable to present their selves as a business hub in global market. Indian economy is very active towards raise markets for retailers on worldwide. Among the entire world Indian economy is IInd rapidly developing Economy, also holding a position of IIIrd position as an largest economy in the terminology of Gross domestic product i.e "GDP" and worldwide, also it is the largest economy holding IVth position in terms of "P-Purchasing P-Power P-Parity", Also in FDI goals India is also ranked amongst the top 10. That is why India is depicting incredible growth and opportunities in the organized retail sector. Many retailers are re-entering in the zone of market along with the unique layouts and plans and also attracting towards buyers like malls, supermarkets chain stores and other departmental stores.

2.   Background of the Study:

When started shopping from retail apparel stores under few specific brands, it becomes a habit of mine; the attractive thing was offers and promotional activities which were conducted by marketers. Observed that lot of differences between previous purchasing and present purchasing behaviour of mine. Similarly it happened with other buyers too. Reasons of these changes are firstly, too much publicity of offers/discounts/promotional activities by the company. Secondly, buyers are taking too much effort to get all information's about such kind of promotional activities. Thirdly, social environment carrying many factors which effects buyer's buying. Apart from the activities by marketers; these changes also because of geographical, economic development and development in the state and it resulted to changes in living standard of buyers in Chhattisgarh.

In present Scenario, every buyer's have a different needs and fulfilment of all those needs marketers require bunch of solutions for satisfy their customer. Now questions arises here-

- Do they (customer) really feel satisfied?
- What are the needs of the customer in today's busy schedule?
- In fact, they do not have enough time to feel/realize their happiness, satisfaction, or utility of goods.
- Mostly families are nuclear family.
- Are they (customers) able to understand promotional activities?

It is also important to understand why buyers choose the competition over particular product. This analysis may reveal some startling facts and provide direction for future differentiation strategies. At the heart of every business, strategy must be a deep understanding of buyer. India is among the top five emerging retail market in the world and is growing at a burning pace.

The key drivers of India's retail industry are a number of structural - social, demographic and macro-economic factors. These areas-

- Rising income levels
- A large segment of young population
- Nuclear family structure
- Growing literacy
- A rapidly expanding middle class
- Increasing number of working women
- Growing urbanization increasing media penetration.

Growing buyer acceptance of modern retail formats, changing lifestyles of the Indian households resulting from these factors have raised aspiration levels of population, resulting in demand for better shopping experience and larger variety of goods.

Sales publicity patterns focuses to occupy the market zones and improves the sales capacity. It's a major tool in marketing in order to facilitate the marketing attempts. In today's era sales publicity is an essential form to increase sales. Sales publicity develops a fashionable attitude and affluences.

In the wider perception it's not an expense; its lent for return, as it provides good advantages. It aims in building up needs. It is true to claim that sales publicity for moving the products. A producer should aware the consumers to learn about the product and he should able to create effect on them through purchasing of that particular product.

3. Research Model:

Objectives of the research study are-

- To understand the impact of sales promotion on consumer's buying decisions.
- To identify the role of store display, discounts coupons and free sample in order to enhance brand switching and purchase acceleration.
- To know relationship between factors that affects consumer's buying behavior.

To fulfilment of these objectives below is the research model that shows the role of sales promotion and relationship between other factors that affects consumers' buying behavior.
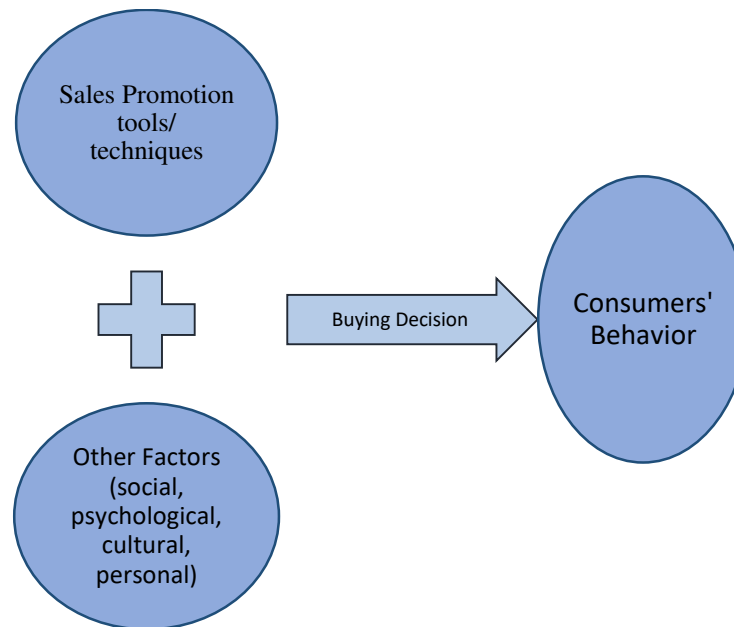
4. Data Analysis & Interpretation:

Frequency table shows distribution of frequencies about female and male visits in apparel stores (Central and Brand Factory). Below table shows the each entry contains about frequency or count of the occurrences of values within a particular interval and in this way the table summarizes the values of distribution of frequencies about buyers' visit in the Central and Brand Factory during a month between 15th Jan 2020 to 15th Feb 2020.

Table No. 01 GENDER					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	female	81	40.5	40.5	40.5
	male	119	59.5	59.5	100.0
	Total	200	100.0	100.0	

Interpretation- Above table shows those frequencies of Gender Profile of the respondents in frequencies and percentage; that 60% of Male i.e. 119 (out of 200 respondents) and 40% i.e. 81 (out of 200 respondents) of Female are both participated in this research. On the basis of calculated data it can be conclude that male respondents are more conscious towards sales promotion schemes and frequently visits Brand Factory or/and Central. Conclusion statement will be there is a strong impact of sales promotion on gender of the respondents.

Table No. 02 OCCUPATION					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	House Maker	13	6.5	6.5	6.5
	Other	8	4.0	4.0	10.5
	Retired from Job	6	3.0	3.0	13.5
	self Employed	32	16.0	16.0	29.5
	Service	93	46.5	46.5	76.0

	Student	44	22.0	22.0	98.0
	Unemployed	4	2.0	2.0	100.0
	Total	200	100.0	100.0	

Interpretation- Table 02 representing occupation of respondents i.e. Students, Self Employed, Service, House Maker, Unemployed, Retired from Job and Other respectively. Calculated data shows that 22%, 16%, 46.5%, 6.5%, 2%, 2%, 3%, 4% respectively and they are frequently visit the stores and attracted towards sales promotion schemes. On the basis of above information it can be concluded that occupation characteristics of demographic variable of buyers are strongly affected by sales promotional schemes by the apparel stores.

Table No. 03 FAMILY SIZE					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3 to 6 members	166	83.0	83.0	83.0
	7 to 10 members	21	10.5	10.5	93.5
	Below 2 members	12	6.0	6.0	99.5
	More than 10 members	1	.5	.5	100.0
	Total	200	100.0	100.0	

Interpretation- The above data shows Family Members Profile of the respondents. 83% of respondents from 3-6 family members are influencing by the Sales Promotion Activities available at Brand Factory or/and Central. (10.5%) 7 to 10 members of family size and influenced by the offers and schemes. 6% respondents are give preference to these stores for shopping. Only .5% respondents from big family size (more than 10 members in a family) are give preference to buy apparels from these stores.

Table No. 04 ANNUAL INCOME					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	More than Rs. 10,00,001 pa	24	12.0	12.0	12.0
	Nil	12	6.0	6.0	18.0
	Rs. 2,00,001 to Rs. 4,00,000 pa	40	20.0	20.0	38.0
	Rs. 4,00,001 to Rs. 6,00,000 pa	41	20.5	20.5	58.5
	Rs. 6,00,001 to Rs. 8,00,000 pa	20	10.0	10.0	68.5
	Rs. 8,00,001 to Rs. 10,00,000 pa	20	10.0	10.0	78.5
	Under Rs. 2,00,000 pa	43	21.5	21.5	100.0
	Total	200	100.0	100.0	

Interpretation- The above table and figure shows the Annual income of the respondents. The 12%, 6%, 20%, 20.5%, 10%, 10%, 21.5% respondents represents the different annual income group and they are frequently visit and give preference to buy apparels from these stores.

Table No. 05 AGE					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 yrs – 24 yrs	60	30.0	30.0	30.0
	25 yrs – 34 yrs	73	36.5	36.5	66.5
	35 yrs – 44 yrs	41	20.5	20.5	87.0
	45 yrs – 54 yrs	11	5.5	5.5	92.5
	55 yrs – 64 yrs	5	2.5	2.5	95.0
	65 yrs or older	5	2.5	2.5	97.5
	Younger than 18 years	5	2.5	2.5	100.0
	Total	200	100.0	100.0	

Interpretation- The above calculated data shows the Age profile of the respondents. 36% respondents from 25 Years to 34 Years influenced by the sales promotional activities. 30% respondents laying between 18 Years to 24Years age group is on second number to choose these stores for buying apparels. On third number 20% respondents from 35 Years to 44 Years age group. 5.5%, 2.5%, 2.5%, 2.5%, respondents) from 45 Years to 54 Years, Younger than 18 years, 55 Years to 64 Years, More than 65 Years respectively age group they give preference to buy apparel from Brand Factory or/and Central.

Table No. 06 EXPENDITURE

		Frequency	Percent	Valid Percent	Cumulative Percent
	Less than Rs. 10,000	46	23.0	23.0	23.0
	Rs. 10,001 to Rs. 20,000	72	36.0	36.0	59.0
	Rs. 20,001 to Rs. 30,000	34	17.0	17.0	76.0
Valid	Rs. 30,001 to Rs. 40,000	16	8.0	8.0	84.0
	Rs. 40,001 to Rs. 50,000	10	5.0	5.0	89.0
	Rs. 50,001 and above	22	11.0	11.0	100.0
	Total	200	100.0	100.0	

Interpretation- Above calculated data shows Amount spent by the respondents annually. 23% respondents spend amount between Rs. 10,001 to Rs. 20,000, secondly, 36% respondents spend amount between Rs. 20,001 to Rs. 30,000 thirdly, 17% of respondents spend amount less than the Rs. 21,000 to Rs. 30,000 annually and remaining 8%, 5%, 11% respondents apparels from Brand Factory or/and Central stores.

Table No. 07 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Q1) I always suggest others to buy apparel from Central & Brand Factory Stores.	200	1	5	3.85	1.138
Q2) I give preference to buy apparel from Central & Brand Factory due to availability of apparel as per fashion and trend.	200	1	5	3.33	1.214
Q3) I found my saving habits positively affected by sales promotion schemes.	200	1	5	3.29	1.252
Q4) My social surrounding influences me to buy more.	200	1	5	3.33	1.214
Q5) I discuss with my friends and colleagues/other known people about quality of dress for costly purchase.	200	1	5	3.68	1.170
Q6) I never found any complaint with respect to services provided by Central & Brand Factory Stores.	200	1	5	3.33	1.214
Q7) Store display influences me to buy more.	200	1	5	3.33	1.214
Q8) I can easily switch brand due to sales promotion schemes.	200	1	5	3.36	1.252
Q9) I give preference to buy apparel from Central & Brand Factory Stores due to sales promotion activities.	200	1	5	3.46	1.187
Valid N (list wise)	200				

Interpretation- The overall mean calculated with the help of SPSS software to know how Sales promotion motivates buyer to switch brand, purchase acceleration and product trial is more than 3.33, values indicating that the majority of respondents buying behaviour affected by sales promotion schemes and they switch brand, trial new products and purchase accelerate due to sales promotion. Hence we can say that there is a result of sales publicity activities on consumer's purchasing attitude.

5. Conclusion:

The major findings of the research indicate that consumers' buying behavior affected by sales promotion activities by the marketers. But the male respondents are more attracted towards the female respondents. Most of the respondents are from service category. Most of the 3 to 6 members of family size are attracted towards sales promotion

schemes. Respondents from 2 lakhs of income group are more attracted towards offers and schemes and they are ready to buy branded apparels due to discount and other promotional offers. Respondents from 25 yrs to 34 yrs are mostly attracted towards offers. According to data analysis respondents' maximum spending amount to buy apparel is between Rs.10,000 to Rs. 20,000 in a year. Maximum respondents influenced by their social surroundings, family and friends.

Here we can conclude that sales promotion have an impact on consumers' buying behavior and there is a positive relation between social factors and consumers' behavior as well as consumer's easily switch brand due to discounts, free gifts and other sales promotion schemes.

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E-COMMERCE – New Revolution round the corner for INDIA

Dr.Vijay Karmarkar
Professor- MBA, Gyanganga College of Technology,
Gyanganga Group of Institutions, Jabalpur- 482002
Email - vijaykarmarkar6@gmail.com

Abstract: *Today, the entire world is looking at India as the most potential market in the Asian continent mainly because of its unique dividend of young working population. We have a flourishing economy, rapid growth of internet spread accompanied with a market of 1.4 billion people.   Indian e-commerce is surely to grow as an avenue of high margin businesses which can generate secured returns for investors. E-commerce comprises of online marketing of almost everything under the sun.*

Rapid digitalization and internet penetration has pacified the ecommerce business in India like never before. Now even petty vendors, dealers, shopkeepers and customers commonly speak and use e-payment methods for numerous transactions across the domestic and international market places. Online browsing is highest in metro cities and semi-urban or rural markets alike. Smart Mobile phones along with PCs/Laptops are catching up in the country as most favoured online shopping devices.

The highly popular e-commerce categories, not surprisingly, are non-consumable—durables and entertainment-related products. Day to day consumable products are still purchased from regular, next door stores like Mom-n-Pop shops, grocers and general/medical stores. Research report of a leading agency ,namely Nielson, show that almost half of the respondents in an online survey intend to purchase clothing, cosmetics, book railways, bus or airline tickets, do hotel reservations using an online device in the next couple of months. Other categories growing in prominence for online shopping include e-books, e-papers, soft wares, event tickets, sporting goods, toys and the list is endless. Spending intentions for each have risen at a double-digit or near double-digit percentage-point rates over the last decade.

This empirical article is an effort to look into the positive and negative aspects the modern revolution in India, called " e-commerce" all over the globe. Also, the author's observations about whether we, the citizens of this huge nation, are really prepared to face the forthcoming challenges posed by this revolution are penned for the readers' perusal.

Key words: *E commerce new revolution, shopping devices, flourishing economy.*

PREAMBLE:

E – commerce is not a new thing now-a-days. Common knowledge tells us that E-commerce is a type of industry where all the transactions like buying or selling of products/ services is done through convenient electronic systems such as the internet or other electronic networks. Our Mobile handset is a major component of online trading, digital fund transfers, managing the Supply chain, e- marketing, electronic data exchange or interchange , Inventory management and Automated data collection systems. No wonder ecommerce has evolved as a main driver of international economies. So it will be interesting and useful to look at various dimensions of ecommerce which are going to revolutionize our lives much faster than we anticipate.

1. The Beginning

It all started as an amazing thing for all of us in India when the first ATM was set up in 1987 by HSBC in Mumbai. Within the next decade ATM population in the country reached 1500. Another remarkable milestone was achieved when Videsh Sanchar Nigam Limited (VSNL) launched public Internet access on August 15, 1995 in India. It was followed by Swadhan, the first ever network of ATMs was set up by the Indian Banks Association in 1997.

2. Ambitious leap forward

The new government which came to power at the centre in 2014 was determined to bring new reforms in almost every sector touching the common Indian's life. Very soon , as of 1st July 2015 Digital India was launched by the Prime Minister of India. The main critical objective was to connect rural and semi-urban areas with high-speed Internet network and improving digital literacy among the masses.

This giant movement of Digital India has brought in multi dimensional changes in our lives and some of the major measures are elaborated further.

3. AADHAAR ENABLED PAYMENT SYSTEM (AEPS)

Our simple and humble Aadhar card is now much more than just an identity card. All our bank accounts are digitally linked with it and the new model of AEPS has brought banking services almost at our doorsteps making financial inclusion transaction safe and secure. In this payment service a bank customer is empowered to use Aadhaar as his/her identity to access his/ her respective Aadhar enabled bank account and perform basic banking transactions like balance enquiry, cash deposit, cash withdrawal, remittances through a Business Correspondent. In short ecommerce is closer now.

4. Arrival of BPS/BPO

Outsourcing of work by many leading international companies to Indian companies has created millions of job opportunities for young technical/nontechnical graduates in the nation. Business Process Services, Business Process Outsourcing, Customer call centres are very common job providers now. The India BPO promotion scheme provides attractive incentives for establishment of BPO/ITES in all parts of the country. It may also create good number of indirect jobs. It is certainly a greatly beneficial dimension of ecommerce in India. We can say there is evidence of positive benefits of ecommerce here.

5. DIGIDHAN ABHIYAAN

This new initiative plans to enable all citizens and traders/marketers to undertake real time digital transactions through the DIGIDHAN Bazaar. By organising DigiDhan Melas across the nation, it aims to handhold users in downloading, installing and using various digital payment systems for carrying out online transactions.

6. MYGOV Platform

This is an unique, innovative initiative launched by the Hon'ble Prime Minister of India Shri Narendra Modiji. It is really first -of -its – kind participatory governance initiative involving the common Indian citizen at large. MyGov will surely bring the government closer to the common man by way of the use of online platform enabling an interface for healthy exchange of ideas and views involving the common citizen and experts with the ultimate goal to contribute to the social and economic transformation of India.

7. Educational Services - NATIONAL MISSION ON EDUCATION

Educational services form a major component of commerce and now with the help of ICT in teaching learning process all the learners in higher education will certainly benefit. It is a landmark initiative of the Ministry of Human Resource Development to address all the education and learning related needs of students, teachers and lifelong learners.

8. E Commerce bringing change in North East

For providing better job opportunities for the youths in the IT-ITES sector which is a compliment to ecommerce North east BPO promotion scheme has been launched by the government. The main objectives NEBPS are (i) Creating employment opportunities for the local youth in NER, by promoting the IT/ITES Industry particularly by setting up the BPO/ITES operations. (ii) Promotion of investment in IT/ITES Sector in NER in order to expand the base of IT Industry and secure balanced regional growth.

9. E commerce now enabling a stronger PDS

Another initiative taken by the Government of India is " Targeted Public Distribution System (TPDS)" which focuses on the economically weaker sections of the sociaty. As per TPDS, the States were required to formulate and implement foolproof arrangements for identification of the poor for delivery of food grains and for its distribution in a transparent and accountable manner at the ground level. The scheme, when introduced, was intended to benefit about 6 crore poor families in India for whom a quantity of about 72 lakh tonnes of food grains was earmarked annually for final distribution.

10. AGRIMARKET – E commerce

With an aim to keep farmers abreast with the crop prices and discourage them to carry-out distress sale this mobile application has been developed . Farmers can easily get information related to prices of crops in markets within 50km of their own location using the AgriMarket Mobile App. This app automatically captures the location of the farmers using mobile GPS and fetches the market prices of crops which fall within the range of 50km. The prices of agro- commodities are sourced from the Agmarknet portal. Presently, the apps is available in English and Hindi languages.

11 . EBIZ – alias ecommerce

eBiz is being implemented by Infosys Technologies Limited (Infosys) under the guidance and aegis of **Department of Industrial Policy and Promotion (DIPP), Ministry of Commerce & Industry, Government of India.** The main focus of eBiz is to improve the business environment in the country by enabling fast and efficient access to Government-to-Business (G2B) services through an online portal. This will help in reducing unnecessary delays in various regulatory processes required to start and run businesses. E commerce is bringing a lot of change.

12. E-Commerce in Business to Business

E-Commerce in B2B refers to Supplier Management: Electronic applications in this arena help in expediting business partnerships through the elimination of purchase order (PO) processing costs, cycle times, and by maximizing the number of purchase orders processed with minimum manpower engaged. In case of inventory Management Electronic applications make the order-ship - bill process faster. For instance, if most of a business's partners are linked electronically, any information sent by mail can be transmitted or responded to instantly. Business houses can easily keep track of their documents to make ensure that they were received on time. Such a system improves auditing capabilities, and helps in reducing inventory levels, improve inventory turns, and eliminate out-of-stock occurrences at any given point of time.

13. E-Commerce in Business to Customers

E-Commerce in Business to Customers relates to Purchasing products and information-
Due to internet applications it is possible for consumers to look up online information about existing and new products/services. It also helps in personal finance management like the consumers can manage investments and personal finances through the use of online banking tools. Policybazaar.com is a good example of B2C electronic commerce application, particularly of purchasing products online.

14 .E-Commerce: Benefit to Business Organizations

E-Commerce offers a big benefit to business firms to expand the marketplace in the national and international markets. It reduces the cost of creating, processing, distributing, storing and retrieving paper-based information. It enables reduced inventories and overhead costs by facilitating "pull" type supply chain management. Pull type processing permits customization of products and services which provides competitive advantages to the business firms. It further reduces the time between the outlay of capital and the receipt of products and services. It also supports Business Processes Reengineering (BPR) efforts. It can lower telecommunication cost – the internet is much cheaper than any other Value Added Networks (VANs).

15. E-Commerce - Benefits to Consumers

E-Commerce offers numerous benefits to the end consumers. It provides the customers with more choices, enables accessibility to information 24 hours a day, all year round from almost any location. Customers can get less expensive products and services as they can shop in many places and conduct quick comparisons. It also allows quick delivery of products and services in majority cases, especially with digitized products. Buyers can participate in virtual auctions. Customers may interact with other customers in electronic communities and exchange ideas as well as compare experiences. Electronic commerce facilitates more competition, which results in substantial bargains for the customers.

16. E-Commerce - Benefits to Society

E-Commerce offers various benefits to the society by enabling more individuals to work at home, and to do less travelling for shopping. Reduces traffic on the roads thereby lowers air pollution. It allows some merchandise to be sold at lower prices benefiting the economically weaker people. It enables people in inaccessible areas to enjoy products and services which otherwise are not available to them locally. Also it facilitates delivery of public services at reduced cost, increases effectiveness, and/or improves quality.
Apart from the above listed benefits Ecommerce also has few limitations as follows -

Limitations of E – Commerce

o   Lack of sufficient security of the systems accompanied with dependability of networks.
o   Unofficial standards of businesses and commonly agreed communication protocols.
o   Difficulties in integrating the Internet and ecommerce software with some existing applications and databases resulting in inconvenience to the users.
o   Critical need for special Web servers and other support infrastructures, in addition to the network servers which may incur additional costs.
o   Possible problems of interoperability, meaning that some software does not fit with any given hardware, or is incompatible with some operating systems or other components.

- o Justification of operating costs.
- o Problems related to Security and Privacy, absence of Trust and inherent user resistance.
- o Intangibility of products/services, touch and feel online.
- o Many unresolved/pending legal issues.
- o Rapidly evolving and changing E-commerce.
- o Non availability of proper support services.
- o Infinitely large number of sellers and buyers.
- o Breakdown of human relationships as there is no personal contact.
- o Expensive and/or inconvenient accessibility to the Internet.

Conclusion:

On the backdrop of the entire discussion so far we can come to the conclusion that Indian Economy is very much on the threshold of a new revolution i.e. E-Commerce speedily invading the industry, trade & commerce. Gone will be the days of the traditional commerce involving high operating costs, taxes, advertisements and large number of employees. E Commerce will prove to be a complete game changer and everything under the sun will be bought and sold online. Our vegetable vendors, daily needs suppliers and petty shop keepers will become part of the history over next three/four decades. Dynamic online marketers like Big basket, Amazon, Flip cart, Myntra, Home shop18, Swiggy and many more will be available just at fingertips capturing the market spaces by providing world class services across the globe. **So, India, get ready for the revolution just around the corner....!**

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EFFECTIVENESS OF HUMAN RESOURCEINFORMATION SYSTEM ON THE ROLE OF HRM

MISS SHRADHA NAMDEO

ASSISTANT PROFFESOR FROM MANAGEMENT DEPARTMENT
SAI COLLEGE, SECTOR-06,BHILAI
Email - shradhanamdeo96@gmail.com

Abstract: Human Resource Information System(HRIS) is a part of Human Resource Management System(HRMS).HRIS works as a software in organization for benefit of human resource. HRIS is a combination of Human resources and Information technology and it provide the software solution for any organization. HRIS manage the performance of organization as well as handling the resources of human like talent, skill and knowledge. Software solution include the leave policy handling, performance handling and provide basic system work for organization. HRIS software that provides a workflow within human resource by providing information flow at accurate time duration and enabling to increase the performance level of human resource. The Goal of HRIS is to merge various parts of HR like Recruitment, Selection, Payroll, Time log, Leave, Attendance scheduling etc. In most of the situation HRIS will also lead to more efficient and effective work when at the time of decision making. HRIS make the information flow easier and work more systematic & accurate.
Key Words: HRIS, HRMS.

INTRODUCTION:

HRIS is a systematic procedure of collecting, storing, maintain, retrieving and validating data need by an organization about its Human resources. HRIS is usually a part of organization larger management information system (MIS). Thus HRIS is defined as the range of computerized technology that is used to store, record, link, analysis and present data regarding HR policies, HR plans for ensuring to increase the performance level within the organization. It is work as system software that gives effective and efficient work in an organization.

EFFECTIVENESS OF HRIS
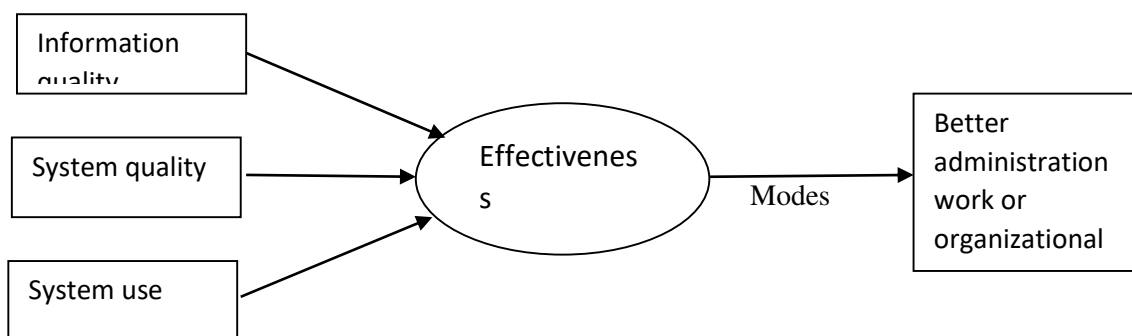
By HRIS we get better quality of information which moves to quality system which execute the work in more effective manner. This HRIS is use by organization for better administration work. The information quality is satisfactory and information accuracy means time reduction, job performance improvement, flexible interaction with the system and also get the opportunity to achieve the goal in better way.

MATERIALS:
A. HUMAN RESOURCE INFORMATION SYSTEM:

HR is Information System is a system which works in information for systematic flow which is used to track data. It is one of the Management Information System (MIS). Employee data are stored manually by HR Manager. Now a day system change into computerized i.e. store the data, retrieve the data as per the uses of organization. Storing of data in memories of computer system brings out more accurate and up to date work for betterment of organization. It brings better work with more accuracy, effectiveness with efficient output. HR manager need to be more strategic for utilizations of resources.

B. TRADITIONAL VIEW OF HRIS:

HRIS is used to supply the information within the organization among various resources for decision making. HR department stores the every information and data of employee regarding personal history, skills, salaries, training and development. HRIS helps to maintaining the relationship between the organizations and employees. Many years ago most of the time organization were used to storing data and information in paper work and for this they were use the spreadsheet and it is time consuming technique and infect it is very difficult for HR manager to understand each and every employees emotions and efforts towards the performance.

C. MODERN VIEW OF HRIS:

HR functions changing rapidly to social and evolving Information Technology, It provide expanded services of high quality with faster work. IT enables technology to deliver securities simultaneously with increasing expectation of employee, manager, customer, supplier and regulator. HRIS support HR by defining it as integrated system. It is use to gather store and analyze information regarding HR initial efforts to managing data about personal and organizational impact by using technology in HR story.

Applications of Human Resource Information System

Input subsystem   **Retrieve as per usage/**
                                                            Output subsystem
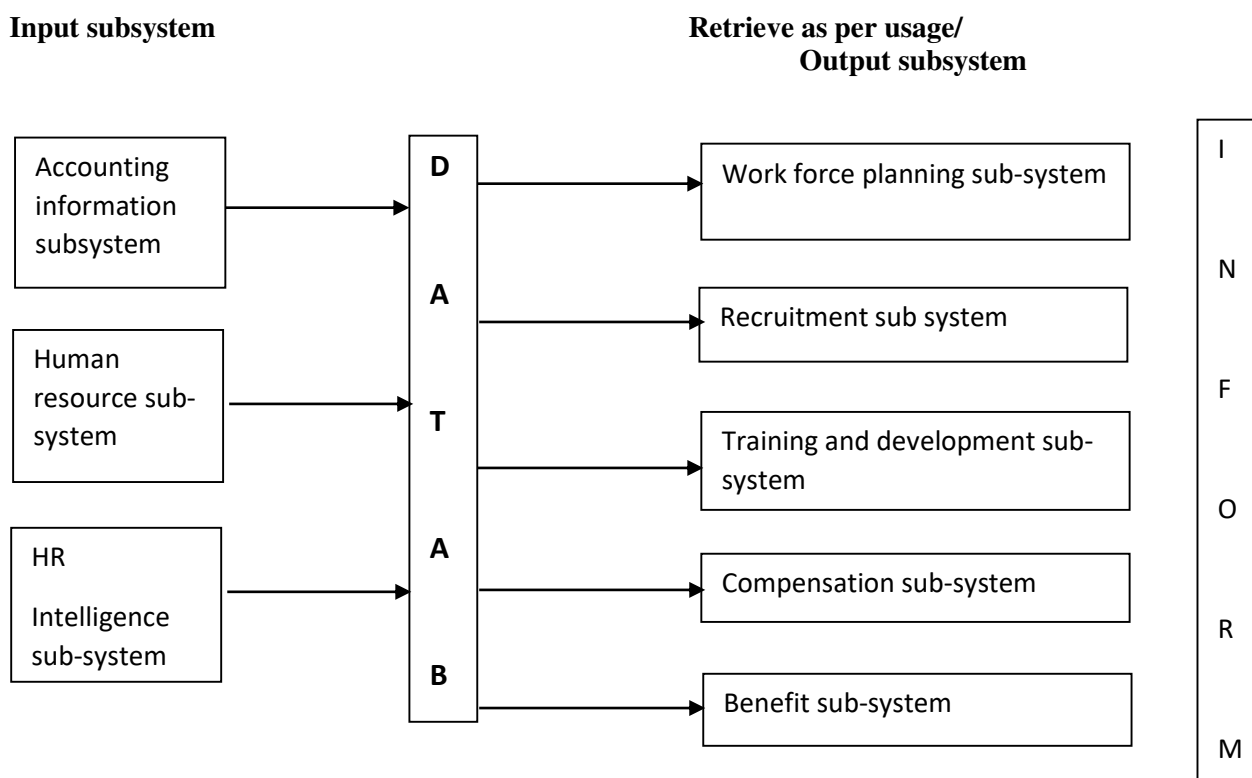
There are three components Input subsystem, Data base and Output subsystem. Input subsystem which is enter data in database. All the input subsystem involves all the data entry process. It is type of a system software which stored all the personnel data that describe the HR transactions and transforms it into the require format and use in workforce planning, recruitment, training and development, compensation, benefits and for the various parts of reporting channels.

RESEARCH METHODOLOGY:

A Descriptive type of research was used to enable the research by taken personal interaction from authorities and employees of different organization. The study conducted and data was collected from employees who worked in an organization where HRIS system is involved. For collecting data directly views or opinions is taken by respondents.
DISCUSSION:

The objective of the study is to understand the effectiveness of the Human resource information system and to know it's usage in any organization.

FINDINGS & ANALYSIS:

HRIS is an asset which helps to assist manpower for their better utilization of resources & improving their capabilities. Our world is step into the era of modernization where information is easily accessible. Information may get & pass from different stages according to use information gather, retrieve, manipulate etc. it can be possible through the

system of software within an organization to get more Quantitative and Qualitative information with more accuracy in less time.

　　Manual system is time taking, more complicated and most of the time information not get in time due to which organization may bear loss. HRIS is a key to any organization which helps to manage many activities like-Recruitment, selection, training and development & attendance schedule etc.

　　This system is enabling to produce more effective and faster outcome then that can be done on papers. It allows the organization to measuring the gap or potential risk and increase efficiency by making HRIS as a part of any organization. The HR department can transform itself to be a strategic business partner.

CONCLUSION:

　　HRIS is a key of organization that assist to manage various activities like recruitment, selection, salaries, training and development, attendance scheduling, time log, retirement etc. it means all the application regarding HR needs and capabilities. HRIS compare the qualification (talent, skill, knowledge) and job position of personnel and exert actual output of employee, and bridging the gap between standard output and actual output of personnel. Through the system software of HRIS organization will get Quantitative and Qualitative information both with more accuracy in less time as compare to manual system. All the applications of HRIS and its usage to improve the organization work which create more satisfaction among the employees.

LIMITATIONS:

　　　　a. HRIS is not accepted in all organization because it is expensive in terms of finance and manpower.
　　　　b. People having lack of computer knowledge
　　　　c. Computer cannot substitute human being.

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Emotional Labour in Service Sector - An Overview

Dr. Elizabeth George
Associate Professor,   Department of Management Studies
Adi Shankara Institute of Engineering and Technology (ASIET), Kalady, Kerala, India
elizabethgeorge04@gmail.com

Abstract: Service Organizations are booming day by day. Customer perception and satisfaction on service quality is of prime importance in these organizations. Service employees have a vital role to perform as they are the only point of contact of the customers. Service organizations insist that their employees have to be careful in delivering the services. The employees have to perform emotion work to maintain the service quality and so emotional labour has become an integral part of the job of service employees. This paper presents a review of literature on emotional labour. It has attempted to explain the concept of emotional labour, discuss the beginning of concept, and look deeper into different perspectives of Emotional labour. The positive and negative consequences of emotional labourare also discussed.

1.   INTRODUCTION:

As the competition is very intense in the hospitality industry, it has become indispensable for hospitality companies to provide world class services to become competent. Service employees are the only point of contact the customers have, with the organization. They have an intense and direct contact with customers. So the role of service employees is prominent in organizations. Customer's perception on the service quality is becoming imperative for service organizations to sustain. These customer perceptions are influenced by the emotions displayed by the service employee during the interaction (Pugh, 2001). It is not necessary that the emotions the employees display are their actual emotions. Those service employees, who are able to manage their emotions effectively, can augment the performance of their organisation and improve customer satisfaction (Zerbe, Hartel, & Ashkanasyet al., 2008).Hence organizations are keen on the emotions displayed by the employees.

2.   EMOTIONAL LABOUR

Emotional labour is the expression of organizationally desired emotions by service agents during service encounters (Johnson, 2007).It is the individual's response to emotional job demands, defined as work characteristics that put the employee in emotionally stressful situations (Peeters et al., 2005).

3.   ROOTS OF EMOTIONAL LABOUR

Goffman (1959) claimed that people follow certain rules while interacting in a social context and compared the people behaviour in the social context with theatrical performances. He stated that there may be a gap between emotions expressed and felt emotions. Later, based on Goffman's study, Arlie Russell Hochschild (1983) coined the term, emotional labour. According to her Emotional Labour is the management of feeling to create a publicly observable facial and bodily display. When interacting with customers, employees are considered as actors, and the work setting is considered as their stage. She used the concepts of surface acting and deep acting to describe how employees perform emotional labour (Hochschild, 1983). According to her, jobs with emotional labour have three criteria;1) these jobs require face-to-face or voice-to-voice contact with the customer 2) these jobs require the worker to produce an emotional state in the customer 3) these jobs allow the employer to exercise a degree of control over the emotional activities of employees (Hochschild, 1983). She felt that emotional labour is particularly required for service workers who have direct interactions with customers and identified forty four professions lawyers, judges, librarians etc. that involve emotional labour.

4.   DIFFERENT PERSPECTIVES OF EMOTIONAL LABOUR

Behavioural Approach

Ashforth and Humphrey (1993) defined emotional labour as the act of displaying the appropriate emotions. They viewed Emotional Labour from behavioural perspective rather than emotional perspective. They suggested that the experience of emotions and expression of emotions are two different aspects. Employees need not regulate their feelings to show the required emotions (Ashforth & Humphrey, 1993).

Interactionist Approach

Morris and Feldman(1996) considered Emotional Labour as an Interactionist Approach. They defined emotional labour as the effort, planning, and control needed to express organizationally desired emotion during interpersonal transactions. According to this perspective emotional labour is a characteristic of the job. They proposed four dimensions of emotional labour: (a) frequency of interactions, (b) attentiveness to required display rules (intensity of emotional display, duration of interaction), (c) variety of emotions required and, (d) emotional dissonance. Out of this, two

dimensions of emotional labour are more prominent: i) display rules and ii) emotional dissonance. Display rules refer to the rules that decide when and how emotions should be expressed and emotional dissonance is defined as a state where the expressed emotions are different from the actual emotions

Other Approaches

Grandey (2000) suggests that both the above mentioned approaches have their own draw backs and has attempted to refine the construct of emotional labour. Ashforth and Humphrey (1993) considere motional labour as observable expressions of emotions and Morris and Feldman (1996) focuses on the characteristics of a job to invoke emotional labour. According to Grandey(2000) emotional labour is the process of regulating both feelings and expressions for attainment of organizational goals i.e. managing the emotions so that they are suitable for the organization. It refers to the processes of emotional regulation through self-acting and deep acting.

Rubin et al. (2005) attempted to differentiate emotional dissonance(organizational requirements) and emotional labour (the motivated behaviour). They claimed that confusions are caused because of including emotional state and motivational behaviour and other situational factors like intensity and frequency of emotions, in the definition of emotional labour. They also added that those who do not perceive emotional dissonance will not be motivated to engage in emotional labour.

5. EMOTIONAL LABOUR -A LITERATURE SURVEY

The concept of Emotional labour has undergone major change since it was coined by Hochschild (1983). Hochschild (1983) did her research in the airline industry, and focused on the emotional labour of flight attendants .Several researchers did their study on emotional labour in different occupational domains like front desk employees of hotel industry (Ramachandran, Jordan, Troth and Lawrence, 2011);nurses (Yang and Chang, 2008; Maunder, 2006; Brunton, 2005, Ashforth& Humphrey, 1993), call centre employees (Holman et al.(2002; Lewig& Dollard, 2003), bank employees (Ghalandari et al,2012; Schmutte, 1999;Sharma and Sharma,2014).), prison officers (Rutter and Fielding, 1988) ,teachers (Yilmaz et al.,2015; Dunbar et al., 2014).Researchers proposed three types of acting to describe how employees perform emotional labour: *Surface acting, Deep acting, and Genuine acting* (Hochschild, 1983; Ashforth& Humphrey, 1993).

Surface Acting

Surface acting is expressing the emotions through outward appearance. These emotions are not actually felt. Surface acting occurs when a person changes only his or her outward appearances and does not actually feel the displayed emotions. For e.g. Soft voice, facial expressions like smile etc.Surface acting can reciprocate in the behaviour even though it is not actually felt(Hochschild, 1983). One flight attendant described how surface acting helped her to elicit friendly behaviour. When she pretended that she is feeling very positive, at times, she actually felt positive and friendly. The passengers also responded to her as though she was friendly and then she would be more enthusiastic and responded back (Hochschild, 1990). In surface acting, feelings are changed from the outside in, whereas in deep acting feelings are changed from the inside out (Hochschild, 1983). The SA strategy attempts to make only external expressions correspond to normative emotion required by an organization regardless of employees' internal emotion. This could cause emotional dissonance due to conflicts between employees' internal feeling and normative emotion (Rafaeli& Sutton, 1987).

Deep Acting

Deep acting takes place when a person intentionally feels the emotions they are required to display. It involves changing inner feelings by altering something more than just outward appearance to work up on the emotions, through training or past experience. Hochschild (1983) classified deep acting as a) exhorting feeling, wherein a person attempts to evoke or suppress an emotion, and b) trained imagination, wherein aperson invokes thoughts, images, and memories to induce the associated emotion (a marriage to feel happy or a tragedy to feel sad). In a training session, flight attendants are taught to imagine the cabin as a living room and passengers as their guests, and to consider difficult passengers as children who need attention (Hochschild, 1983). For example, one flight attendant described how she used the deep acting technique to control her anger when she dealt with an annoying customer. She said while dealing with a drunken customer who was yelling at her, she imagined him as a child (Hochschild, 1983) and could handle the situation effectively. The DA strategy tries to change even employee's internal emotion in the direction of normative emotion (Rafaeli& Sutton, 1987).

Genuine Acting

Genuine acting is the situation where employees spontaneously experience and express the actual emotion (Ashforth& Humphrey, 1993). Ashforth& Humphrey, 1993) opines that Hochschild ignores the situation wherein one spontaneously and genuinely experiences and expresses the expected emotion without exerting any effort (Ashforth& Humphrey, 1993). For e.g. a nurse who feels sympathy at the sight of an injured child need not act, the feeling comes genuinely. Kruml and Geddes (2000) also argue that acting classification of Hochschild is incorrect because she

described the genuinely expressed emotions of service employees as passive deep acting or genuine acting. In this competitive world the companies may not just expect surface acting; they prefer deep acting or genuine acting from their employees.

6. CONSEQUENCES OF EMOTIONAL LABOUR
Though most of the studies showed negative consequences of emotional labour, some studies show certain positive outcome also.

Positive Consequence of Emotional Labour
Wharton (1993) suggests that performance of emotional labour does not have uniformly negative consequences for employees. She adds that the effects of emotional labour are conditioned based on employees' job autonomy, job involvement, and their self-monitoring skills. Some of the positive outcomes of Emotional Labour are job satisfaction, reduced stress, well-being, performance etc.

Job Satisfaction
The research on emotional labour and job satisfaction has been ambiguous. Some studies show a positive relation between emotional labour and job satisfaction whereas some shows a negative relationship. In a study among hospital and bank employees, Wharton (1993) found a positive association between emotional labour and job satisfaction. Several other studies in different occupational context like table servers and bank employees have also shown positive correlation between emotion work/display and job satisfaction (Adelmann, 1995 and Schmutte, 1999).

Reduced Stress
Rafeli and Sutton (1989) in their study found that employees who have to show their smiling faces have a low level of stress and a high level of job satisfaction. Ashforth and Humphrey, (1993) also suggested that emotion work makes the outcomes of the interactions predictable, which can reduce the stress and uncertainty associated with the tasks.

Well-Being/Self Efficacy
Ashforth and Humphrey (1993) opined that emotional labour can increase self -efficacy and task effectiveness and also increase personal well-beingof the employees in service roles. Adelman (1989) concluded that, in contrary to Hochschild's assumption, performing emotional labour does not adversely impact employees' psychological well-being (Adelman, 1989).

Organizational Performance
Rafaeli and Sutton (1987) found that positive emotions of the service employee bring about immediate benefit for the organization like increase in sales and repeated business. Emotion work influence the behaviour of the client positively, enhancing the organizational performance(Zapf, 2002).Ashforth & Humphrey(1993) also states that, employees' emotional display in scripted manner can enhance task effectiveness and service quality.

Negative Consequence of Emotional Labour
Most of the studies on emotional labour focus on the negative outcomes of emotional labour. Here we can see some of the negative outcome of EL.The most-often-researched outcomes are job dissatisfaction and increased stress, emotional exhaustion and low well-being.

Job Dissatisfaction and Increased Stress
Emotional dissonance, a sub-factor of emotional labour leads to lower job satisfaction (Morris and Feldman, 1996). Adelmann (1989) compared the emotional labour group and non-emotional labour group, and found that the job satisfaction, self-esteem and health condition of employees in the emotional labour group are low. Rutter and Fielding (1988) in a study among British prison officers found that the need to suppress actually felt emotions showed a negative correlation with job satisfaction. Surface acting leads to inauthentic or fake emotional displays resulting in psychological distress (Liu et al., 2008). Result of the study on Emotional dissonance during nurse-patient interactions also showed job dissatisfaction (Yang & Chang, 2008). Pugliesi and Shook (1997) found that emotional labour decreases job satisfaction and increases job stress. These studies show that there is a strong negative relationship between JS and EL in different sectors.

Emotional Exhaustion
Morris and Feldman (1996) who conceptualized the construct of emotional labour argued that, Frequency of emotional display, attentiveness to display rules, variety of emotions to be displayed, and emotional dissonance lead to emotional exhaustion. Schaubroeck and Jones (2000) suggested that physical symptoms as well as emotional exhaustion can be caused as employees spend a lot of efforts and energy to hide their positive or negative emotion while providing

services. Studies have shown that the tension and conflict arising from emotional dissonance is significantly associated with higher emotional exhaustion and lower job satisfaction (Abraham, 1999).

Totterdell & Holman (2003) and Grandey (2003) investigated the association between surface acting and emotional exhaustion, and found a positive correlation between the two variables. They also found that that surface acting is more positively and strongly related to emotional exhaustion than deep acting. Grandey (2003) offered two reasons for the cause emotional exhaustion while performing the job. First, is that the employees experience tension as a result of emotional dissonance, which is caused when there is a discrepancy between the actual and expressed emotions. Second, the resources are drained when employees put in a lot of efforts while acting.

Low Well-being

Mishra and Bhatnagar (2010) examined the relationship of organizational identification and emotional dissonance with turnover intention and well-being among a sample of 468 medical representatives in the Indian pharmaceutical industry. They found a negative association between emotional dissonance and emotional well-being. Emotional dissonance has a mediating effect also on the relationship between turnover intention and emotional well-being. Emotional displays which is not actually felt,   is positively associated with various indicators of low well-being like anxiety and depression (Holman, Chissick, and Totterdell,2002).

However, Johnson and Spector (2007) showed surface acting negatively correlated with well-being and deep acting positively correlated with affective well-being, respectively. They explains that deep acting, allows the employees to experience the displayed emotions (positive emotions) which contribute in enhancing the overall well-being of employees.

7.   CONCLUSION:

Emotional labour is the management of emotions while performing the service jobs. Organizations insist on emotional labour as the customers' perception on service quality depends on the interaction of employees with customers and their emotional display. Though there is some research on emotional labour, there is a lack of clarity in the definitions of emotional labour. Most of the studies have focused on the negative consequences of emotional labour. This paper has done a literature survey on emotional labour and has attempted to look deeper into different perspectives of Emotional labour. Some of the research results reveal the positive consequences like job satisfaction, reduced stress, employee wellbeing and better performance as a result of emotional labour.It is true that there are some negative consequences for emotional labour, however emotional labour and display during the interaction with customers is vital for the service organizations to sustain.

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A Study of Tax Saving Instruments of Individual Tax Payers

Dr. Sunita Kshatriya
Asst. Prof. St. Thomas college, Bhilai, India

Abstract: *Tax planning means the assessment of one's financial affairs without violating the legal provisions of an act. It reduces the burden of taxation of an assessee by taking the full advantage of exemptions, deductions, rebates and relief permitted under the act, so that the full burden of the taxation on an assessee, as far as possible, is the least. This study aims to know the most suitable and popular tax saving instrument used to save tax and to know the amount saved by using that instruments Overall findings of the study reveals that 80C deduction is the most adopted tax saving instrument and 80EE is the second most adopted tax saving instrument.*

Key words: *Income Tax, Tax Planning, Tax Saving Instrument, Tax Avoidance and Tax Evasion.*

INCOME TAX AND TAX PLANNING:

INTRODUCTION:

A fee charged by government on a product, income or activity is called tax. There are two types of taxes; if tax is levied directly on the income or wealth of a person, such tax is called direct tax. E.g.:- Income tax. If tax is levied on the price of goods or services it called indirect tax. Eg GST, Excise duty. The government needs money to maintain law and order in the country, safeguard the security of the country from foreign powers and promote the welfare of the people. Since our government is wedded to the socialistic pattern of society it is the foremost bridge the gap between the rich and poor. All this required mobilization of funds from various sources. Income Tax being a direct tax, is an important tool to achieve balanced socio-economic growth by providing concessions and incentives in income tax for various development purposes.

INCOME TAX:

Income tax is the most important direct tax. The levy of income tax in India is governed by the income tax act 1961 and the act came into force on 1st April 1962. Central Board of Direct Taxes is looked after the administration of direct taxes. Income tax is an annual tax on income. The income of previous year is taxable in the next following assessment year at the rate or rates applicable to that assessment year. The tax rate is fixed by the Annual Finance Act. Income tax is charged on the total income of the every person. A person includes Individual, Hindu Undivided Family, Association Of Person, Body Of Individuals, Firm, Company and Every other person. The person by whom any tax or any other sum of money is payable under income tax act 1961 is called assessee.

INCOME TAX SLAB RATE FOR THE ASSESSMENT YEAR 2019-20

Individuals (Less Than 60 Years Old) Income Tax Slabs

Tax rate Income up to Rs. 2,50,000 nil

 Income from   2,50,000- 5,00,000   5%

 Income from   5,00,000- 10,00,000   20%

 Income more than Rs. 10,00,000   30%

 Individuals (60 years old or more but less than 80 years old)

Income Tax Slabs Tax rate Income up to Rs. 3,00,000 nil

 Income from 3,00,000- 5,00,000 5%

 Income from 5,00,000- 10,00,000 20%

 Income more than Rs. 10,00,000 30%

 Very senior citizens (80 years old or more) Income Tax Slabs

Tax rate Income up to Rs. 5,00,000 nil

 Income from 5,00,000- 10,00,000 20%

Income more than Rs. 10,00,000 30%

Surcharge: If total income is between Rs. 50 lakhs and Rs.1 crore- 10% of income tax.

If total income exceeds Rs.1 crore-15% of income tax

Education Cess: 4% on total of income tax and surcharge.

TAX PLANNING: Tax planning allows a tax payer to make the best use of the various tax exemptions, deductions and benefit to minimize their tax liability over a financial year. It is an important part of a financial plan. Tax planning ensures accruals of tax benefits within the four concerns of law and also ensures the tax obligations are properly discharged to avoid a penal provision. Tax planning is an activity undertaken to minimize tax liability through the best use of all available allowances, deductions, exclusions, exemptions, etc. to reduce income.

TAX EVASION, TAX AVOIDANCE AND TAX MANAGEMENT:

TAX EVASION: Tax evasion is a deliberate attempt of a tax payer for reducing tax liability by misrepresentation of facts, falsification of accounts including downright fraud. In other words, when a person reduces his total income by making false claims or by withholding the information regarding his real income, so that his tax liability is reduced is a tax evasion. Tax evasion is not only immoral, anti-social and anti-national practices. Therefore, under the direct tax laws provisions have been made for the imposition of heavy penalty and the institution of prosecution against tax evaders.

TAX AVOIDANCE: It is a method of reducing tax incidence by availing certain loop holes in the law. Tax avoidance is an art of dodging tax without actually breaking the law. The Royal Commission on Taxation for Canada has explained the concept of 'avoidance of tax'. It is done by adjusting the affairs in such a manner that there is no infringement of taxation laws and taking full advantage of the loopholes there in to attract the least incidence of tax.

TAX MANAGEMENT: Tax planning is not possible without tax management. Tax management is an internal part of tax planning. It takes necessary precautions to comply with the legal formalities to avail the tax exemptions, deductions. Tax management also protects an assesse against penalty and prosecution by charging tax obligations in time.

OBJECTIVES OF THE STUDY:

➢ To find out the most suitable tax saving instrument used to save tax.

➢ To examine the amount saved by using tax saving instrument.

REVIEW OF LITERATURE:
- Srivasta (2017) researched and found that there are variety of investment options available in the market but a best investment option can be something which is beneficial to the individual assessee from the point of view of tax saving and wealth creation in future.
- Dev (2015) carried out a study to explain tax planning measures adopted by different salaried class are almost uniform. Gender and experience wise assessees have no significant relationship with the level of tax awareness.
- Nirmala Dorasamy (2011), in her study propounded that personal income tax administration reforms as a mechanism to enhance collection of revenue on the one hand and availability of more pool of fund for welfare of the public on the other. She also found that a comprehensive tax policy promotes the individual to compliance tax laws other ways they adopt unfair means to reduce their tax burden.
- Ria Sinha (2010) tries to evaluate the existing tax structure in India in comparison to some of the developed and developing countries like, Mexico, South Korea, Japan, China, USA, UK, Canada and Malaysia. The study revealed that, extend of government expenditure financed by taxes was comparatively law in India as compared to developed countries.
- Ankita Gupta (2009) studied the major trends in the taxation of personal income in India after the tax reforms initiated in the liberalization era. It was revealed that tax reforms have a favorable impact on the growth of personal income tax. The study concluded that simplification of tax rate and broadening of tax base are the important reforms undertaken for reforming the tax structure and increasing its responsiveness.

RESEARCH METHODOLOGY:

The research design of the study is descriptive in nature. It throws light on relationship between assesses age group and income level on tax saving amount. Research methodology is a way to solve problem.

DATA COLLECTION: Secondary data was collected from text books, journals, on-line published articles and news papers.

AN OVERVIEW OF TAX SAVING INSTRUMENTS:

Section 80C: The maximum tax exemption limit under Section 80C is Rs 1.5 Lakh. The major investment avenues or expenses that can be claimed as tax deductions under section 80c are as below;

- PPF- Public Provident Fund
- EPF - Employees' Provident Fund
- Five year Post office or bank Tax saving Deposits
- NSC - National Savings Certificates
- ELSS Mutual Funds- Equity Linked Saving Schemes
- Kid's Tuition Fees
- Post office Senior Citizen Savings Scheme (SCSS)
- Principal repayment of Home Loan
- NPS - National Pension System
- Life Insurance Premium
- Sukanya Samriddhi Account Deposit Scheme

Section 80CCC: Under section 80CCC contribution to annuity plan of LIC or any other Life Insurance Company is considered for tax benefit of Rs 1.5 Lakh for receiving pension from the fund.

Section 80CCD: Employee can contribute to Government notified Pension Schemes Eg:- National Pension Scheme. The contributions can be up to 10% of the salary (salaried individuals) and Rs 50,000 additional tax benefit u/s 80CCD (1b) was proposed in Budget 2015. Individual other than the salaried class can contribute up to 20% of their gross income and can be deducted from the taxable income. As per the financial year 2018-2019 the total deduction under section 80C, 80CCC and 80CCD together cannot exceed Rs.1,50,000 and additional tax deduction of Rs 50,000 u/s 80CCD . Section 80D: The maximum tax deduction limits for senior citizens under Section 80D for FY 2017-18 is Rs. 50,000.

- Under Section 80D an individual can claim a deduction in respect of payments towards annual premium on health insurance policy, preventive health check-up or medical expenditure in respect of senior citizen (above 60 years of age).

- Very Senior Citizens (who are above 80 years of age), in case they don't have health insurance can claim a deduction of up to Rs 30,000 incurred towards medical expenditure. An additional deduction can be claimed by Individuals who pay premiums for their dependent senior citizens parents can on health insurance premium (or) medical expenditure. Note: Preventive health checkup expenses to the extent of Rs 5,000/- per family can be claimed as tax deductions. Section 80DD we can claim up to Rs 75,000 for spending on medical treatments of your dependents (spouse, parents, kids or siblings) that have 40% disability. In case of severe disability tax deduction limit of up to Rs 1.25 lakh can be availed of an individual To claim this deduction, submit Form no 10- IA Section 80DDB An individual (less than 60 years of age) can claim up to Rs 40,000 for the treatment of specified critical ailments for him and on behalf of his dependent under this section. The tax deduction limit under this section has been revised to Rs. 1, 00,000 for Senior Citizens and very Senior Citizens (above 80 years). Section 80E Loan taken for higher studies of assessee or his/her spouse or his/her children or for a student for whom assessee is a legal guardian, tax deduction can be claimed under Section 80E for interest of such Education Loan. There is no limit on the amount of interest claim as deduction under section 80E. The deduction is available for a maximum of 8 years or till the interest is paid, whichever is earlier under the section 80E.

Section 80EE Eligible home buyers can claim exemption of Rs. 50,000/- for interest on home loan from assessment year beginning from 1st April 2017 and subsequent years. Section 80G Contributions made via cheque or draft or in cash to certain relief funds and charitable institutions can be claimed as a deduction. Contributions such as food, material, clothes, medicines etc do not qualify for deduction under this act The donations made to any Political party can be claimed under section 80GGC and in the FY 2018-19, the limit of deduction is reduced from current Rs 10,000 to Rs 2,000 under section 80G / 80GGC for donations made in cash only. Section 80GG Under this section total amount of tax deduction is Rs 60,000 per annum. Section 80GG is applicable to an individual who do not own a residential house & do not receive HRA. The amount of tax deduction will be limited to the least amount of the following

- Excess of rent paid over 10 percent the adjusted total income.
- Rs 5,000 per month; or
- 25 % of the total income.

Rebate under Section 87A For rebate total income has been increased from 3,50,000 to 5,00,000. The amount of rebate has been increased from 2,500 to 12,500 has been proposed in Budget 2019-20. Section 80 TTA & new Section

80TTB The Interest income earned on Fixed Deposits & Recurring Deposits (Banks / Post office schemes) will be exempt up to Rs 50,000 (limit is up to Rs 10,000), for senior citizens. This deduction can be claimed under new Section 80TTB, however, no deductions under existing 80TTA can be claimed if 80TTB tax benefit has been claimed (the limit for FY 2017-18 & FY 2018-19 is Rs 10,000 u/s 80TTA). Section 80TTA offers deductions on interest on savings bank deposit up to Rs 10,000. Interest income from deposits held with companies will not benefit this deduction ie, senior citizens will not get this benefit for interest income from corporate fixed deposits us/ 80TTB.

Section 80U This is similar to Section 80DD. Tax deduction is allowed for the assessee who is physically and mentally challenged. Standard Deduction - Rs 40,000 in-lieu of Medical Allowance The medical allowance of up to Rs 15,000 is exempted income from Gross salary for FY 2017-18. To claim this deduction assessee need to submit medical bills to the employer and get the allowance benefit. Under Section 10 of the Income Tax Act medical reimbursement allowance is exempted.

RESULTS AND DISCUSSIONS

According to their priority, the most adopted tax saving instrument is deduction under 80C, which got the first rank in this study. The second most adopted tax saving instrument is u/s 80EE ie, tax deduction for interest on home loan upto Rs. 50,000. Third choice is deduction for interest on education loan (80E). Contribution made to certain relief funds and charitable institutions (80G), deduction for medical insurance & health check up (80D),deductions for disabled individuals (80U) got fourth, fifth and sixth ranks respectively.

CONCLUSION

Any individuals who want to assess income tax and want to do tax planning and savings, first calculate total income then compute the income tax by deduction and adjustment in total income as per taxable structure. Tax planning is not just a strategy to reduce tax burden. It helps to save tax by encouraging investments in Government Securities. Tax planning not only reduces the tax burden of an individual but also gives mental satisfaction to them. This study creates awareness about tax planning in the minds of assesses as well as the researcher. In the course of the present research, the Researches in the near future can attempt to study, the tax planning of Individual assessees in respect of tax on Fringe Benefits, Bank Cash Transaction and Securities Transaction and the Opinion of the Tax Consultants, Industrialists and Trade Unions in respect of Tax Planning Options offered for various categories of assessees by the Government of India

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M- Commerce: Opportunities And Challenges in India

Khushboo Patel

M.com 4th Semester.

(Guru Ghasidas Vishwavidyalaya)

Patelkhushboo657@gmail.com

Kundan Jangde

M.com 4th Semester.

(Guru Ghasidas Vishwavidyalaya)

kundanjangde120@gmail.com

ABSTRACT: *Today, every business related action is being seen in electronic form, this is the other side of traditional commerce which makes the buying and selling of goods very simple and safe. When we use mobile to do this business related action, then it is name of mobile commerce is given, whose prevailing speed is increasing very much. Through this study, which mobile The desire to know the quantity of goods being traded by them has been expressed. Today's market is a hand-held business based on the electronic device, which can be easily obtained by the people. Which can prove to be a threat to mobile commerce, these speed related work related to safety and security fears etc. which should be taken into consideration Buy and sell. Hence, this paper will detail the issues faced by both user and provider in the connect of India.*

Keywords : m-commerce, smartphone, online business, virtual market.

INTRODUCTION OF M-COMMERCE

Mobile Commerce means doing trade, businesses by mobile for getting anything, Mobile is an electronic wireless device, easily portable, can hold at a single hand. For example - Tablets, Cell phone. E-Commerce can be said M-Commerce if it is available without wire known as wireless E-Commerce. M-Commerce market is in the initial stage in India. In the previous year M-commerce grows very fast; in coming year It can be a great success for the Indian market in this field. In India currently, 70% of people have featured mobile phones, but most of the people don't know how to use those advanced features, who makes easy for our life. They can only deal with basics use like Calling, Messaging, Internet surfing. To more expand the market of M-commerce in India, we need to give some boost-up through some better Ideas, Innovations like Merger & Collaboration. M-commerce will be coming next generation of E-commerce. Payment makes easy by Mobile commerce as the difficulty of the amount in decimal and odd figures like - $ 99 or $48.67. There are many collaboration & partnerships between the Telecommunication and Banking sector Industry following are some examples of Bharti Airtel & Axis Bank, Vodafone & ICICI Bank. All this collaboration proves that rapid growth of M-commerce. It also gives a huge credit for the development of a virtual wallet popularly known as an E-wallet or Electronic wallet which transfers the physical form of wallet in the pocket to Electronic form. M-commerce having large scope as mobile phones are available at very low prices with OS like IOS and Android.

WHAT IS M-COMMERCE

M-commerce means trading through electronic gadgets. Any types of transactions by using handheld devices like mobile phones, tablets, that involves the transfer of title (ownership), Getting the right to use the goods and avail the services. First M-commerce is used to pay Coca-Cola Vending Machines at Helsinki in Finland.

By simply using Cell phone Invest money in share market, Mutual Fund, Transfer fund, Order online Food, Books, Clothes, Groceries, Medicines, tickets Booking for Flight Train, Metros, Bus, Hotels, Cinema, Etc. Prepaid Recharges Water, Electricity Bills, Gas connections & also Voting for Reality shows, like DID, Dance**+**, Play Games like Kon Banega Crorepati and now betting in Crickets Dream11**.** It also facilitates Online advice of Doctors Includes Payment for online Fees, Challans, Taxes, Countless services that are made available by M-commerce. Mobile Commerce can be categories *as*

- Mobile money
- Mobile ATM
- Mobile vouchers, coupons
- Mobile banking
- Mobile marketing
- Mobile browsing

Due to M-commerce, Producers facilitates many types of offers, discounts and organizes Sale also like Big Billion Day Sale on Flipkart, Flash Sales on Amazon because It helps to reduce the cost of goods and services by eliminating huge money/ capital i.e. Invested in Market intermediaries (like Agent, Wholesaler, Retailer or Distributors). It gives

birth to a new concept Just in Time Manufacturing as production starts after receiving the order from a client and takes 6-7 days for delivery which saves the money /capital of the company from ideal investment on warehouses, raw materials and stocks. It also initiates the company with zero money invested in inventories with a great profit.

KINDS OF M-COMMERCE
- Mobile commerce includes banking service by mobile device, purchase and sale service by mobile, other payments made by mobile etc.
- Purchasing by mobile provides many facilities to the customer such as; -Purchasing goods and availing services from electronic commerce organization like Flipkart, Amazon zomato etc.
- Mobile banking involves the smart phone used by the person in hand, which helps the customer in financial related transactions.
- This mobile commerce or banking is generally done through a secure, dedicated app provided by banking institutions like BHIM , SBI YONO etc.
- Mobile payment is a good medium that enables a person to buy goods or products using a mobile device, Paytm, Amazon Pay, etc. The app helps the customer to buy products or make digital payments without using any swap or physical cash.

How mobile commerce works
To do mobile commerce, an electronic device is required which should be a handheld device that is named as Smart Phone or Mobile. This device is a platform or visual place which is connected to a wireless network. This is to say that by connecting mobile to a wireless network, online commerce from the electronic commerce product vendor To develop mobile commerce-related applications that are purchased, the major KPIs to monitor include total mobile traffic, the total amount of traffic to the application, average order value and order value over time. Similarly, tracking mobile add to cart rates will help developers see if users are becoming customers. M-commerce innovators may be interested in average transaction time, mobile cart conversion rates and SMS subscription logging. In the context of mobile payment products, in particular, they operate as peer-to-peer sharing. When the mobile device is matched with the bank card information, the phone can be waved at the payment terminal to pay for the product. This myriad payment using mobile devices is possible due to the Near Field Communication application..

Profit and loss bear in using mobile commerce
The merits of m-commerce include:
- It provide Eco-friendly transactions.
- It attracts more customers and maintains it by being more easily accessible.
- It provides a variety of products and services to its customer.
- Automates customer contact and business point of sale.
- Comparing prices, customers are more comfortable reading and shopping without the need for a desktop computer.

Demerits of m-commerce include:
- The mobile payment option has failed due to poor connection due to geographic location and cannot support all types of digital.
- Just feel fearness about any wrong doing.
- Mobile price cost is high.
- Fear about Payment privacy and security .
- Not everyone is familiar with mobile commerce or using a mobile wallet.

OBJECTIVE:
- To find out the percentages of using mobile wallet.
- To know the number of frequencies of using application in times.
- To identify the areas of spending money through m-commerce

DATA COLLECTION

TABLE NO.01

CONSUMER CURRENTLY USE DEVICES FOR ONLINE MOBILE PAYMENTS

DEVICES	TOTAL IN INDIA	TOTAL IN GLOBAL	GENDER		GENERATION				
			m	f	gen z (18-24)	gen y (25-36)	gen x (37-51)	boomer (52-66)	older (67+)
TABLET	20%	23%	19%	22%	14%	23%	24%	17%	29%
SMARTPHONE	87%	66%	87%	86%	88%	88%	85%	79%	71%
TOTAL MOBILE	88%	71%	89%	88%	89%	90%	85%	80%	71%

*Source-*https://www.entrepreneur.com/article/346340

TABLE NO.02
MOBILE COMMERCE USING IN TIME AND PLACE AREA BASIC

PARTICULAR	TOTAL COUNTRY	TOTAL GLOBAL AVERAGE
Never	1%	12%
Less often	1%	5%
Once in the last 6 months	1%	3%
2-3 times in the last 6 months	2%	7%
Monthly	7%	14%
Every 2 weeks / Fortnightly	5%	11%
Weekly	8%	13%
Several times a week	26%	18%
Daily	17%	8%
Several times a day	32%	9%

*Source-*https://www.entrepreneur.com/article/346340

TABLE NO.03
CONSUMER MOBILE COMMERCE BY CATEGORY

USES OF AREA	PERCENTAGE FOR USE (%)
digital currency	11
CHARITY	13
HOME AND GARDEN	20
SPORTING GOODS	21
TOYS AND GAMES(PHYSICAL)	21
ONLINE GAMING(LIKE PS4)	23
DIGITAL OR VIRTUAL GOODS	30
BOOKS AND MAGAZINES	31
FUEL	34
SUBSCRIPTION(ONLINE AND OFFLINE MUSIC)	39
TRAVEL(E.G.AIRLINE AND ACCOMMODATION)	43
HEALTH AND BEAUTY	43
TRANSPORT (THAT IS RIDESHARE,PUBLIC TRANSPORT ,TAXIS)	44
GROCERIES	48
ELECTRONICS AND COMPUTING	51
TICKETS (LIKE-MOVIES)	58
FOOD AND DRINK	60
CLOTHINK AND ACCESSORIES	68
BILL PAYMENTS(E.G. PHONE INSURANCE, UTILITIES)	70

*Source-*https://www.entrepreneur.com/article/346340

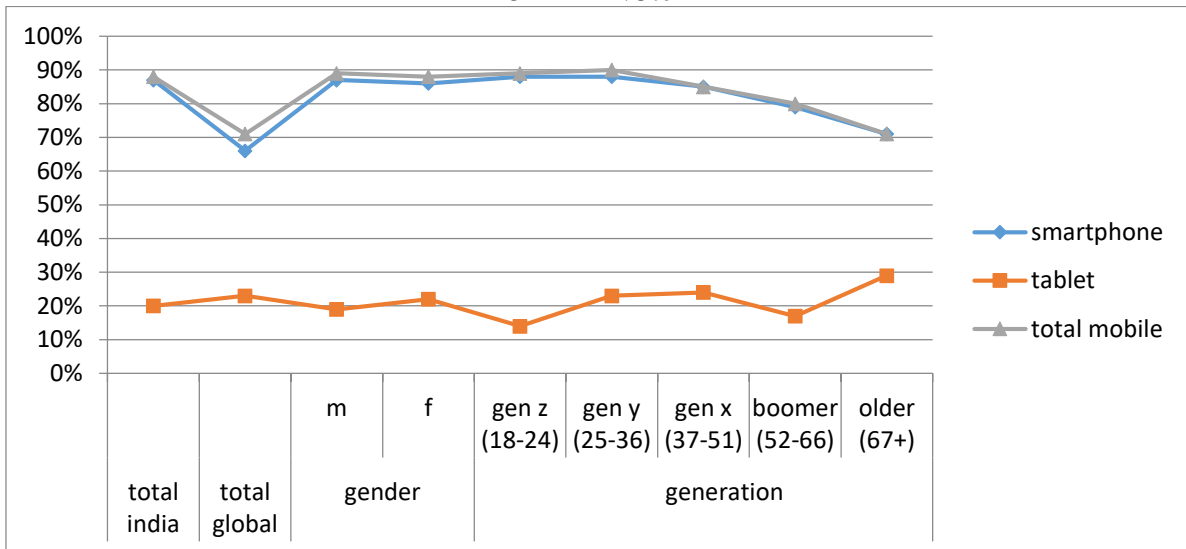**DATA ANALYSIS**
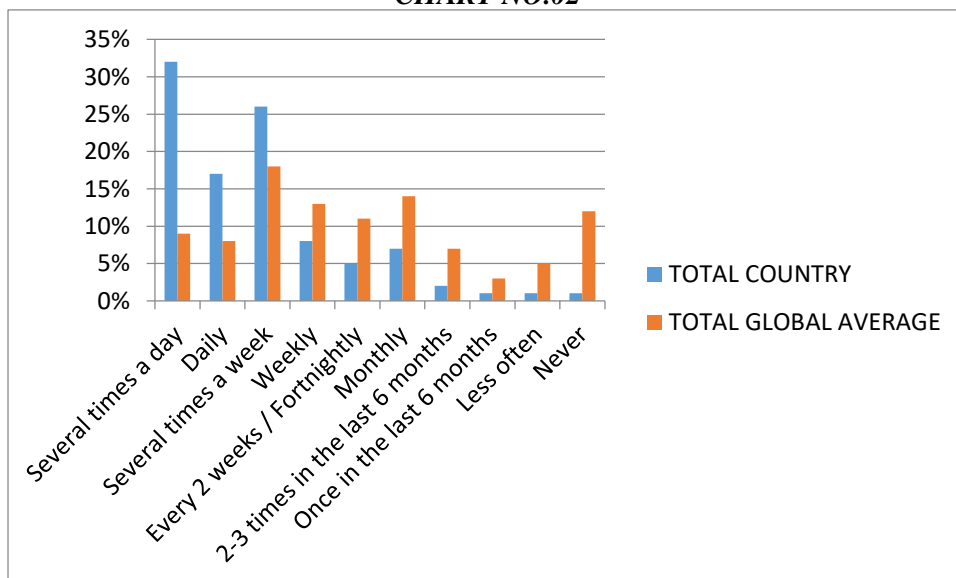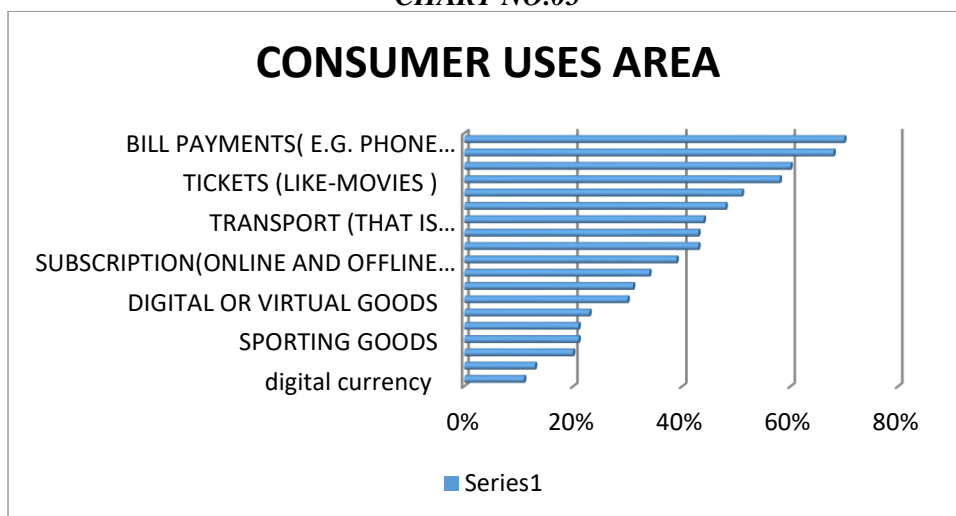
CHART NO.01

CHART NO.02

CHART NO.03

INTERPRETATION
1. BASED ON TABLE AND CHART NO.01

By Analyzing the Table 01 & chart; India is moving much faster than the Global, in the field of using devices especially Smartphones & Mobile Devices for making online payment. On the basis of Gender wise Total 2000

Respondent where 1342 are Male, 658 are Female   %(percentage) of using mobile device of Men &Women are almost same. Further This is Categorize on the Generation basis 7 Old, 70 Boomer, 400 Generation X, 865 Generation Y& 658 from Generation. Through Chart 01 clearly see that Older Gen mostly using Tablets for Payments where, Boomer reduces upto12% to the use of Tablets & 9% increase in the use of Mobile and Smart phones. Generation X increase 7%increase in Tablets and also 5% in Mobile phone whereas Generation Y is using More than all generation Tablets 23% and Mobile 90% & Generation Z use Tablet very rarely for making online payment.

2. BASED ON TABLE AND CHART NO.02

All over on Average spending money by Indian Consumer is rupees 10000 p.m. through Mobile device & nearby 83% consumer makes online payment via Mobile and Smart phones at least once in a week.

3. BASED ON TABLE AND CHART NO.03

Highest frequency of using Mobile phones and Tablets for making payment is on Bill payment, Recharges and then Tickets Transport.

Major finding:
* The majority of respondent use mobile wallet for recharge or bill payment.
* Countless of services are also available through m-commerce including ticket booking, bank accounts and mail accounts management and so forth.
* The security is biggest factor affecting the M-commerce.
* Cheap availability of smart phone(android) help to increase the scope of M-commerce.

SUGGESTION;
* Don't share/show password to any other person.
* All people use mobile commerce carefully.
* M-commerce is a easy way to done commercial activity so people should do like this.

Conclusion

M-Commerce expanding its market share in India, But not without having to deal with challenges and issues. M-Commerce scope is spreading owing to the ease of availability of smart phones in the country. M-Commerce facilitates people &give platform for countless task including making Audio, Video calls, viewing product making orders online purchase, taking online advices by Doctors, Experts also in Education fields like Online coaching, Crash Courses. Countless of services made available on M-commerce Ticket booking for Bus, Train, Flight, Movie Ticket, Hotel Booking, Bank Account, Mail Account Management. However, Use of M-Commerce arises the problem of security. Furthermore the use of M-Commerce sometime require to share some personal information or detail with the service provider like Debit cards, Credit Cards, User's Bank credential information which might put the user at risk.

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THE IMPACT OF M-COMMERCE IN INDIA

Dr. RINCEY B.ABRAHAM
ASSISTANT PROFESSOR
ST.THOMAS COLLEGE, BHILAI

Abstract: *Use of mobile phone has increased so much that it is not just a device to make calls, but an important medium to fulfill all the financial needs for friends and family. Now, mobile phone technology has made another leapfrog to pave its way for a new trend called mobile commerce where the financial transactions are made using mobile devices. The use of handheld devices such as mobile phones is a rapidly growing phenomenon in m-commerce. M–commerce means substitute of goods in excess of the internet through the use of mobile phones or m–commerce is about the explosion of applications and services that are becoming accessible from internet enabled mobile devices it involves new technologies, services and business models. Significant growth of m–commerce application is remarkable in India. In present situation the numbers of users has increase on mobile phone and consuming huge bandwidth of mobile internet providers. Although many people have started E-Commerce but still they hesitate to use M-Commerce because of security problems, payment issues and complexity of mobile applications. This paper identifies facts about the feasibility of M-Commerce in India today its growth and the Strength and opportunity, weakness and threats lying ahead.*

Keywords: *E-business, m-commerce, mobile adoption, technological innovation.*

INTRODUCTION:

Before understanding of E-commerce and M-commerce first of all we understand what commerce is. Because time has changed and according to time definition of commerce also has been changed. Simply Commerce is Exchange of goods or services usually on a small and large scale from place to place or across city, state, or national boundaries. In traditional commerce People can buy things easily but they face some problems like distance, time availability, not safe payments mode and cost difference. But after change in technology and environments in business strategy people think about it and overcome from these problems with the E-commerce. The number of Internet users around the world has been gradually increasing and this growth has provided opportunities for global and regional e-commerce. E-commerce provides multiple benefits to the consumers in form of availability of goods at lower cost, wider choice and saves time it also elimination of paperwork and bureaucracy and provide online services such as banking, ticketing including airlines, bus, railways, bill payments, hotel booking etc.

This study aims to highlight the present situation and status of commerce in India particularly mobile commerce or M-commerce. At present time, mobile phones including smart phones, I-pad and tablets are common items to people, and they are now highly affordable. Users of mobile phones have significantly increased in number, and the bandwidth consumed is large as well. Meanwhile, e-commerce applications are very common today but there is still hesitance among people towards m-commerce use, owing to the issues associated with security and payment, in addition to the complexity of mobile application. It is projected that the future will witness different form of sales and services. Accordingly, problems have arisen in the m-commerce implementation on the sides of users, provider, as well as business. Meanwhile, the application providers are obliged to consider the type and needs of users.

OBJECTIVES:
Main objectives of this research paper are as follows:-
➢ To find out what are the impact of M-commerce in India.
➢ To find out what problems and issues are going to face by M-commerce industry in India.
➢ To find out the growth rate of M-commerce in India.
➢ To understand the benefit and features of M-commerce in India
➢ To find out how Mobile commerce makes life easy i.e. SWOT Analysis

LITERATURE REVIEW :
In India, m-commerce is still in its development stage and its adoption is rather complex. At current time, the uses of mobile phones are no longer limited to making phone calls; mobile phones can now be used in accessing websites, for chatting, and also shopping (just to name a few). In the situation of India, the use of m-commerce has both benefits and drawbacks . Among the advantages include mobility, user friendly, and so forth, while the drawbacks include language barrier, poor graphic resolution, small number of users of mobile phone etc. In India, albeit its newness,

the use of Smartphone has dramatically increased. Relevantly, among the drivers of m-commerce growth include immediate connectivity, factor of Personalization and mobility, localization, and so forth.

Additionally, the use of m-commerce in India has been linked to purchases of ticketing, e-auction, entertainment, and so forth. M-Commerce has indeed transformed people's life as well as their method of engaging in business. The use of m-commerce enables the attainment of knowledge just through phones, and using m-commerce, one can also access and manage his/her bank accounts, escape parking rush, health issues etc. Somehow, the arising issues linked to m-commerce include the issues of security and insufficient speed which could deter user from making purchases and payments online.

Technologies of wireless mobile and the link between e-commerce and m-commerce assist businesses in recognizing what is derivable from m-commerce, the building blocks of e-commerce and m-commerce, as well as the types of applications of m-commerce. Meanwhile, the concept of m-commerce has been defined by many and its acceptance has been evidenced in the society at all levels. Notably, the uses of m-commerce are expansive; for Education, Traffic, Travel and Ticketing, Health care, and so forth. Aside from India, in countries including China and Brazil, m-commerce use appeared to have increased from years2018 to 2019. Alongside the increase in usage, providers of m-commerce have been urged to improve user interface, and employ innovative pricing structures. Meanwhile, among the employed technology protocols in m-commerce include GPRS, WAP, GSM, UMTS, and so forth.

According to Sujata P. Deshmukh, PrashantDeshmukh and G.T. Thampi, The M-commerce is the branch of E-commerce technology; in short we can say that, e-commerce transaction carried out using a mobile hand held devices. Today internet is the part of our daily life for communication, business transaction and market transaction, but India is a country of many different languages, only 5% of people know very well about the English language. If M-commerce use local language, this will not only ensure quickly adoption by the customers but also will be an instant success

IMPACT OF M-COMMERCE ON E-COMMERCE

Online shopping shifts to Smartphone from desktop computers. M-Commerce has proved a major boon for business sectors like fiancé, telecommunication, Retail sectors, Information Sector etc through its versatility and superiority. Increasing internet and mobile saturation, growing acceptability of online payments and favorable demographics has provided the e-commerce sector in India the unique opportunity to companies connect with their customers. it's become crucial for e-commerce companies to have mobile apps that are easy to navigate and designed attractively. To achieve these goals most large e-commerce companies such as Flipkart, its unit Myntra and snap deal have paid top dollar to attract product experts, whose main task is to improve the user experience on mobiles and build a stronger technology infrastructure. Mint has compiled a list of the number of app downloads, user reviews and app rating of 10 popular e-commerce brands, based on data from Google's play store.

M-Commerce and E-Commerce made people to transfer funds, shopping, bidding without going to shops within a moment. E-commerce is conducted on laptops, desktop computers using internet whereas M-Commerce is conducted on mobile phones using internet. M-Commerce is E-commerce on mobile phones. E-Commerce introduced anytime online transactions and M-Commerce introduced Anytime Anywhere online transactions. The ubiquity, reach ability, mobility and flexibility features of M-Commerce have increased the mobile users and mobile internet subscribers in India. M-Commerce is implemented through mobile applications. People are using mobile applications instead of web application for utility bill payment, ticket booking, fund transfer, email and so on. Thus M-Commerce is replacing E-commerce. With these advantages M-Commerce have disadvantages such as tiny screen of device, weak processors, limited memory, poor resolutions, poor data entry, and lack of WAP-enabled devices, expensive data speed, and shortage of bandwidth.

GROWTH OF M-COMMERCE IN INDIA

Various mobile applications are developed for Smartphone users. State Bank Freedom of State Bank of India, I Mobile of ICICI, Axis Mobile for Android of AXIS Bank are the mobile banking applications which are used for on line fund transfer, utility bill payment. IRCTC Connect is used for railway ticket reservation, pay utility bills; Book My Show is used to book movie tickets etc.

Ubiquitous feature of M-Commerce is turning people from E-Commerce to M-Commerce. The development of low-cost smart phones and low mobile tariffs helped for tremendous growth in mobile internet subscribers and hence tremendous growth of M-Commerce in India. In India 70% of internet users access the internet via their mobile phones. The number is expected to reach 415 million by 2021.

Mobile internet is the next BIG revolution in India and as per a study conducted by Google India and IPSOS, around 94% Indian Smartphone users have used their smart device to access internet from their phone. 56% of Smartphone users in the country access the internet multiple times a day (in US, the number stands at 53%). 40% users surf the Net at least once a day. Only 6% never use their phone for connecting to the Web (11% for US). About 76% of Smartphone users in India access social networking sites on their devices compared to 54 per cent in the US. 77% of

Smartphone owners listen to music, while 33 per cent use it for playing games and 32 per cent read newspapers or magazine
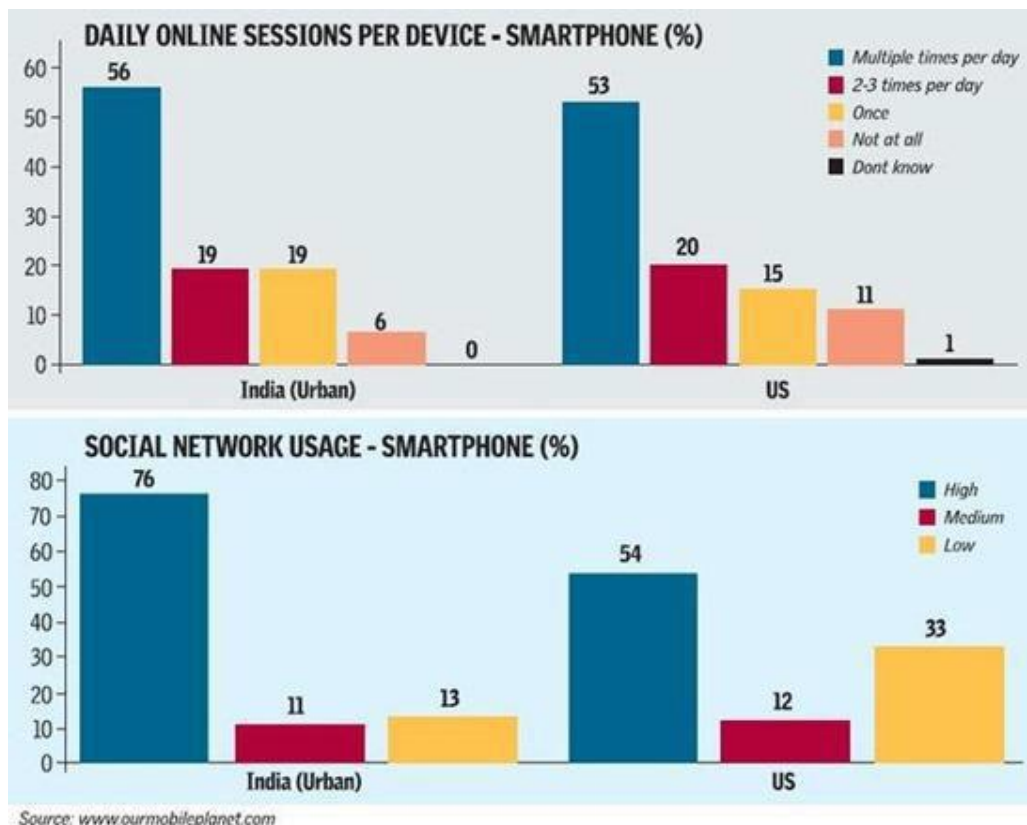
Daily Online Sessions per Device

Thus India is going through a sort of E-Commerce revolution and with more activities happening on the smart phones, experts believe that M-Commerce is becoming the future of E-Commerce. M-Commerce is benefiting from an evolution in consumer behavior and advancement in technology. More and more consumers are shopping across smart phones and tablets.

M-Commerce is buying and selling the products using mobile device, mobile applications and internet. M-Commerce includes the activities of E-Commerce conducted on mobile device. Mobility, flexibility, reach ability, ubiquity are the features of M-Commerce where as tiny screen, low processing power of mobile device, security of mobile transactions are the limitations of M-Commerce. By considering the features of M-Commerce people are using mobile applications for utility bill payment, fund transfer, railway ticket reservations, movie ticket booking and so on. Advancement and low cost of smart phones, reduced mobile internet tariff, busy life of people have attracted the people to do transactions on mobile device. Smart phones are developed to overcome the limitations of M-Commerce. Mobile applications are also developed to give more security to the transactions. Increasingly people are using mobile applications instead of web applications. M-Commerce is progressing and within some years huge number of people will be using mobile applications.

SWOT ANALYSIS:
The strategic planning method is used to evaluate the four important aspects:-i.e. Strength, weakness, opportunity, threats involved in a business venture or in a project is SWOT analysis. It helps to identify the both, external and internal factors in which some are favorable and some are unfavorable in achieving the objectives. For identifying the threats and weakness in M-commerce this SWOT analysis is performed because with the help of it researchers may be motivated and directed towards M-commerce in more successful manner.

Strength
There are four factors on which strength of M-commerce is based:
1) Online access for a portion of the world's population

2) Anticipated ubiquity of devices

3) Location sensitivity of the device

4) Authorization and authentication capabilities

According to Varshney and Vetter, each of the levels in the framework encompasses play a critical role in success and development of M-commerce.

- Mobile middle ware
- Wireless network infrastructure
- Wireless user infrastructure
- Mobile commerce application
- "Always on" connections offered to the Internet GPRS and3G.
- Interactive touchscreen, continuous link with Internet, email can be provided by mobile devices which provides innovative service delivery.
- Location-awareness services
- High quality of services

Weakness

The major weakness for wireless communications is:

- Lack of digital identity

- Lack of data security

List of Risk Associated with WLAN

- It is difficult to implement Anti-Virus solutions
- It is difficult to maintain privacy in data transmission
- Build-in encryption capabilities of WLAN is not used by the existing WLAN installation.
- Some other weakness are: Language barrier as even mobile phones are popularity used by people but many of them are facing functionary problem and other of them are facing language problem i.e. English
- Problem of graphical features as same in feature and also there is lack of processing power and memory for computational power.

Opportunities

Key driver of the mobile market is its size and growth rate. In today's world, people are able to communicate easily without any geographical foundation. The interface between the payment system and merchant's point of sale system that is provided by "payment gateways" companies or organizations. People have flexibility of purchasing the things through mobile and they can also book ticket on it. By sending periodic alerts, paper catalogues can be replaced. Service of directly payment made to the seller's bank and through a credit card company also. Coupons and loyalty cards can be used by retailers. Traffic information results, sports schedule, news alerts, stock market reports are available through mobile platforms. To adopt a fast and easy adoption of technology, open and neutral infrastructure is created and it provides better opportunities.

Threats

Threats faced by M-commerce involved:

- Privacy risk and mobile commerce security
- Mobile middleware security risk
- Wireless user infrastructure security risks
- Mobile application security risks

Main problem or risk related to the remote networking is theft or loss of mobile devices. This risk can be reduced by cancelling the mobile telephone services due to which the sensitive data will not go in wrong hands because if the data goes in the wrong hand then it may cause high financial cost.

- Security threats of e-commerce extended by M-commerce:

- Critical information stored on it is lost and erased without safeguard when the device is sold or stolen.

But other risks which may occurs seldom are:

- Allowing employees to use your home computer to business, to use personal email service for business, allowing employees to use your wireless personal devices.

- These practices cause virus infection at minimum run.

CONCLUSION:

M-Commerce is currently expanding its market in India but not without having to deal with challenges and issues. The use of m-commerce is spreading owing to the ease of availability of Smartphone in this country. Smartphone's allow people to perform countless of tasks including making audio and video calls, viewing products and making purchases online, and so forth, with ease and freedom, in just a few simple clicks. Countless of services are also available through m-commerce including ticket booking, bank accounts and mail accounts management and so forth. However, the issues of security are plaguing the use of m-commerce in this country, considering that wireless connections can be exposed to threats. Furthermore, the use of the applications requires user to share their personal details with the service provider, and this means that user's bank credentials, debit and credit cards are also viewable by others during the apps usage, which might put the user at risk of data thefts. Also, disturbance in connection can cause user to repeat the purchasing process which can be a hassle. Success and failure of m-commerce are caused by many factors. It is therefore necessary for both government and provider in India to identify the factors and make the appropriate efforts as countermeasures, in order that the success of m-commerce in this country can be achieved.

SUGGESTIONS:

There should be taken necessary steps to include these growth factor such as wireless network technology, building of infrastructure to internet connectivity, gives proper awareness of internet, aware more and more peoples about the uses and security of M-commerce applications by the Government of India. The following area's where government should take necessary action for improvement.

➢ Affordability of mobile devices

➢ Mobile internet connectivity

➢ Mobile payments

➢ Security

➢ Low tariffs-high revenue

➢ Proper Government policies

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Public Perception on Cashless Transactions in Bhilai

Dr. M. Madhuri Devi

Asst. Professor, Bhialai Mahila Mahavidyalaya, Bhilai.
Email - madhurikiran@gmail.com

Abstract: *After demonetization initiatives, most of the people in India started electronic payments for their transactions. Everyone from the small merchant to neighbouring vegetable vendor is embracing digital payment solutions. Slowly India is moving from cash to cashless economy. A cashless economy is one in which all the transactions are done using cards or digital means. The circulation of physical currency is minimal in cashless economy. The benefits of Cashless economy are many. The increased use of credit cards will definitely reduce the amount of cash that people have to carry which reduces the risk and the cost associated with that. In this paper an attempt is made to examine the Public perception in Bhilai towards cashless transactions and the attempt is also made to identify the challenges faced by them during their transactions.*

Keywords: *Cashless Transactions, Perception, Digital Payments, Convenience, Incentives.*

Introduction:

Transparency and accountability are the two supporting wheels for the successful implementation of any job. Various developmental measures have been taken through implementation of different schemes. In that course of action, our Prime minister Mr. Narendra Modi has taken a great initiative of Demonetisation to improve Authenticity of all monitory Transactions. His Demonetisation, Digital India as lead people to make electronic Payments. Many of the people in India started electronic payments for their transactions. All the consumers from the small merchant to the vegetable vendor is embracing digital payment solutions. Slowly India is moving from cash to cashless economy. A cashless economy is one where all the transactions are done using cards or digital means. The circulation of physical currency is minimal in cashless economy. There are multiple benefits of Cashless economy.

Payment through credit and debit cards instead of cash enable a more detailed record of all the transactions which take place in the society, give way for more transparency in business operations and monetary transactions. The increased use of credit cards will definitely reduce the amount of cash that people have to carry which reduces the risk and the cost associated with that. In this paper an attempt is made to examine the Public perception in Bhilai towards cashless transactions and the attempt is also made to identify the challenges faced by them during their transactions.

Review of literature

(Pathania, 2016) in his article presents various benefits of cashless transactions to many developing countries. As these result in increased GDP, reduced social cost, as well as increased in financial inclusion due to acceptance of e-payments, reduced in cash payment enables growth of electronic -commerce and facilitated reliability in online transactions. He says that every changing digital world had a huge impact on Human resource. It had created an impact on their jobs and their workplaces. It has great impact on their nature of work and work culture.

(Lauby, Mar 23, 2011) discussed about the critical role to be played in ensuring the efficient and effective transition and transformation from Industrial Era models and processes to their Digital Era upgrades. He has also said that the social and digital technologies are transferring talent management. In addition to transforming talent management, social and digital technologies are changing the nature of work itself which have extensive human capital management implications, ranging from human capital strategy, organizational structure and staffing - to job design, training and development, performance management and compensation.

(Sharma, 2017) Conducted a survey to understand the potential for cashless economy in India, through an extensive household survey of Jodhpur city. It was estimated the extent to which households made non cash expenditure. It was also identified the bottlenecks which prevented households to make non cash payments like Security, internet connection, loss of card, hackers activity, lack of technology are worries of customers towards switching to cashless economy.

(Kumari & Khanna, Cashless Payment: A Behavioural Change to Economic Growth, 2017)**,** The study examines the effect of adopting cashless payment on economic growth and development of the developing countries. The paper discovered that the adoption of the cashless economy policy can enhance the growth of financial stability in the country. It appears that much has already been done in making the people aware of the cashless economy and that a sizeable proportion of the people are ctually awaiting the introduction of the cashless economy. Cashless economy initiative will be of significant benefits to developing economy; hence the cashless system will be helpful in the fight against corruption and money laundering. One most significant contribution of the cashless economy is that it is expected to reduce the risk associated with carrying cash.

Statement of the Research problem:

I have choosen my topic "Public Perception on Cashless Transactions in Bhilai" As we observe the Review of Literature, much work was done on the concept of cashless Economy. But, no one has worked on the study area like Bhilai where we find the crowd of educated and employed public with cosmopolitan culture as people from different states as well as countries live here and Bhilai is known for Education Hub and Mini India.

Objectives of Study:

- To study the Public Perception on Cashless Transactions in Bhilai.
- To know that how far Bhilaians are making cashless payments.
- To know the contribution of consumers towards the successful implementation of cashless Economy.

Hypothesis:

- It has been assumed that the people are in secured about the cashless transactions.
- It has been assumed that most of the people are accustomed to cashless payments.

Statement of the Research problem:

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As we observe the Review of Literature, much work was done on the concept of cashless Economy. But, no one has worked on the study area like Bhilai where we find the crowd of educated and employed public with cosmopolitan culture as people from different states as well as countries live here and Bhilai is known for Education Hub and Mini India.

Research Methodology :

The study is mainly based upon the primary data. Primary data was collected through survey method. Questionnaire was used for collecting data. Questionnaire consists of total sixteen questions out of which four questions related to profile of respondents.

DISCUSSION:

Sample Size:

Total sample size is 195. Staff of Bhilai Mahila Mahavidyalaya, Employees of Bhilai Steel plant and people living in my neighbourhood at Risali of Bhilai were distributed Questionnaires and data was analysed based on their responses. Among those, total male respondents are 115 and female respondents are 80.

Analysis: The data collected through questionnaires is analysed by calculating percentages. Chi-square test is used for testing the hypotheses.

Findings:

Table 1.1: Gender of the Respondents

Gender	Number of Respondents	Percentage
Male	115	58.98
Female	80	41.02
Total	195	100

Result : Out of 195 respondents surveyed, 58.98 percent are male and 41.02 percent respondents are female.

Table 1.2: Age of the Respondents

Age	Number of Respondents	Percentage
Below 30 years	35	17.94
Between 31-40 years	83	42.57
Between 41-50 years	65	33.33
Above 50 years	12	6.16
Total	195	100

Result: Out of 195 respondents surveyed, 17.94 percent respondents' age is below 30 years, 42.57 percent respondents' age is in between 31-40 years, 33.33 percent respondents' age group is in between 41-50 years and remaining 6.16 percent respondents' age is above 50 years.

Table 1.3: Occupation of the Respondents

Occupation	Number of Respondents	Percentage
Farmers	10	5.13
Employee	116	59.49
Self Employed/ Business	28	14.36
Others	41	21.02
Total	195	100

Result: Out of 195 respondents surveyed, 5.13 percent respondents are farmers, 59.49 percent are employees, 14.36 percent are self employed/business holders and remaining 21.02 percent are others.

Table 1.4: Income of the Respondents

Income	Number of Respondents	Percentage
Below Rs.20,000	25	12.82
Between Rs. 20000-40,000	52	26.67
Between Rs. 40,000-60,000	63	32.31
Above Rs.60,000	55	27.56
Total	195	100

Result: From the data in the above table, it is clear that 12.82 percent of respondents' salary is less than Rs.20, 000, 26.67 percent of respondents' salary range between Rs.20, 000 and Rs.40, 000, 32.31 percent of respondents' salary range between 40,000 and 60,000 and remaining 27.56 percent respondents' salary is above 60,000.

Table 1.5: Responses on Convenience in Transaction is the Reason for Cashless Payments in India

Sl.No	Opinion	Number of Respondents	Percentage
1	Strongly Agree	45	23.08
2	Agree	97	49.74
3	Neutral	12	6.15
4	Disagree	31	15.9
5	Strongly Disagree	10	5.13
	Total	195	100

Result: The data in the above table indicates that, 23.08 percent of respondents strongly agree, 49.74 percent of respondents agree, 6.15 percent of respondents are neutral, 15.9 percent of respondents disagree and remaining 5.13 percent of respondents strongly disagree about convenience in transaction is the reason for cashless payments in Bhilai

It is concluded that Majority of the public (72.82%) felt that transaction convenience is the reason for cashless payments in Bhilai.

Table 1.6: Responses on Lack of technical Knowledge is the Obstruction for Cashless Transactions

Sl.No	Opinion	Number of Respondents	Percentage
1	Strongly Agree	39	20
2	Agree	65	33.33
3	Neutral	15	7.69
4	Disagree	44	22.57
5	Strongly Disagree	32	16.41
Total		195	100

The data in the above table indicates that, 20 percent of respondents strongly agree, 33.33 percent of respondents agree, 7.69 percent of respondents are neutral, 22.57 percent of respondents disagree and remaining 16.41 percent of respondents strongly disagree about lack of technical knowledge is the obstruction for cashless transactions. It is concluded that Majority of the public (53.33%) felt that lack of technical knowledge is the obstruction for cashless transactions.

Table 1.7: Responses on Reluctance to Disclose Financial Information Hinders Cashless Transaction

Sl.No	Opinion	Number of Respondents	Percentage
1	Strongly Agree	38	19.49
2	Agree	58	29.74
3	Neutral	25	12.82
4	Disagree	52	26.67
5	Strongly Disagree	22	11.28
Total		195	100

Result: The data in the above table indicates that, 19.49 percent of respondents strongly agree, 29.74 percent of respondents agree, 12.82 percent of respondents are neutral, 26.67 percent of respondents disagree and remaining 11.28 percent of respondents strongly disagree about people reluctance to disclose financial information hinders cashless transactions.

It is concluded that Majority of the public (49.23%) felt that people reluctance to disclose financial information hinders cashless transactions cashless transactions.

Table 1.8: Responses on Security in Transaction is the Main Concern in Cashless Payments

Sl.No	Opinion	Number of Respondents	Percentage
1	Strongly Agree	51	26.15
2	Agree	87	44.62
3	Neutral	13	6.67
4	Disagree	32	16.41
5	Strongly Disagree	12	6.15
Total		195	100

Result: The data in the above table indicates that, 26.15 percent of respondents strongly agree, 44.62 percent of respondents agree, 6.67 percent of respondents are neutral, 16.41 percent of respondents disagree and remaining 6.15 percent of respondents strongly disagree about security in transaction is the main concern in cashless payments. It is concluded that Majority of the public (70.77%) felt that security in transaction is the main concern in cashless payments.

Recommendations:
Proper education and Awareness should be provided to the consumers about the cash less the Payment methods. Security system should be strengthened and processing charges should be minimum. If thes services are provided by Government, then the cashless payment system will be cent per cent followed and the country may achieve its biggest goal of Digital Economy in the course of development.

Conclusion:
The findings reveal that while people are getting comfortable with cashless payments, some kind of negative perceptions are holding back many from adopting the new system. The negative perceptions are like security problems, poor network coverage, and lack of merchant willingness, high transactional costs, lack of users' knowledge on technology, defunct POS machines, delayed reimbursement in case of failed transactions, procedures and financial limits. Convenience in use of cashless transactions and incentive system are the positive signs for the progress of cashless payments in Bhilai. Finally the study concludes that India may not become a cashless economy unless the perception of the people will be rightly addressed by the government and the banking institutions. They should pave the way for the safe and secure mean to cashless transactions.

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Optimal Precedence of Attribute Relevance to study Student's Appraisal

Dr. Mamta Singh

Department of Computer Science, Sai Mahavidyalaya,
Sector-6, Bhilai, Chhattisgarh, India
Email: mamtasingh@saicollege.co.in

Abstract: *The current piece of work is an extension to ongoing research on Feature Extraction Modeling using Educational Data Mining techniques in the past FE modeling experiments used attributes precedence relations of fitness for ranking the contribution (degree of involvement) of the attributes, in enhancing the students' results. In prediction mode during forthcoming exams evaluation were also obtained as part of intermediate results. Hence the authors were convinced with their FE approaches by able to justify the modeling accuracies by extraction of optimal fitness evaluation from fitness/unfitness precedence relations figures.*

Key words: *Data Mining, Precedence, Optimal, Attributes.*

1. INTRODUCTION:

Over recent decades researchers have emphasized much on Feature Extraction as one of the crucial steps in Educational Data Mining. Researchers works on different features of students' using relevant machine learning technique. Such a kind of machine learning task deviates from conventional EDM objectives like eligibility to admissions, transferability, retention or detention, drop-out status and result-grades in courses of study and explores the extent to which the academic efforts must be applied both at student level and at teacher level so that they can be predicted into the category of pass students in their forthcoming end-semester examination.

This research aims to develop an intelligent decision-making model that shall aid in revising teaching pedagogies and remedial instruction guidelines for students identified with low-academic profiles, given the scenario of streams of attributes, well before they face their End Semester Examinations in respective courses.

The novelty of FE approach is that the computations upon class labels were further used to arrive at relative relevance of involved attributes contributable to success or failure grades. The second phase extends the experiment by computing the degrees of involvement due to each of the above attribute in affecting the predicted risk-category Naïve Bayes posterior probabilities are already computed in the first phase of the students by generating precedence relations for those attributes. The performance of the proposed feature-extraction-cum-ranking model is evaluated by extending the experiments with RELIEF method as benchmark.

2. WORK PRELUDE:

The proposed EDM framework begins with setting of Input Parameters that reflect the semester results of on-going batch students. The first set of experiments involves the appearance of four independent experimental parameters namely, Attendance(x_1), Assignment Credit (x_2), Internal score(x_3) and Subject count(x_4). In subsequent experiments, attribute schema was increased by two more features namely, lab credit(x_5) and previous year or semester marks(x_6) of the students to formulate 6- Attribute Feature Extraction (FE)-cum-ranking Model.

The computations begin with the classification of the test-tuples followed by attribute-wise fitness evaluation steps upon those tuples. The training data sets of 87 tuples from three passed-out batches of Second year Bachelor of Computer Application course were processed to compute prior probabilities of 'at risk' students. As the nature of the problem involves the appearance of four independent experimental parameters (x_1 to x_4), it was always appropriate to compute Naïve Bayesian posterior probabilities to compute the class labels, namely 'at-risk' and 'above-risk' values as described with the help of following expressions:

$$(fit|\{x_1, x_2, x_3, x_4\}) = \frac{\sum_{i=1}^{4} p(fit).p\left(\frac{x_i}{fit}\right)}{\sum_{i=1}^{4} p(fit).p\left(\left(\frac{x_i}{fit}\right) + \sum_{i=1}^{4} p(unfit).p\left(\frac{x_i}{unfit}\right)\right)}$$

$$P(unfit|\{x_1, x_2, x_3, x_4\}) = \frac{\sum_{i=1}^{4} p(unfit).p\left(\frac{x_i}{unfit}\right)}{\sum_{i=1}^{4} p(fit).p\left(\frac{x_i}{fit}\right) + \sum_{i=1}^{4} p(unfit).p\left(\frac{x_i}{unfit}\right)}$$

The subsequent computations are extracted from the individual portions of the numerator components contributing to total conditional probabilities of fitness and unfitness. In order to generate the precedence order of these experimental (external) attributes, once again the components of the (1) and (2) were revisited used for computing average

fitness (average_fit(x_i)) and average unfitness (average_unfit(xi)) of the students owing to each attribute as shown in (3) and (4).

$$average\_fit(x_i, t_j) = \frac{p(fit).p(\frac{x_i}{fit})}{\sum_{i=1}^{4} p(fit)p(\frac{x_i}{fit}) + \sum_{i=1}^{4} p(unfit).p(\frac{x_i}{unfit})} \quad (3)$$

$$average\_unfit(x_i, t_j) = \frac{p(unfit).p\left(\frac{xi}{unfit}\right)}{\sum_{i=1}^{4} p(fit).p\left(\frac{x_i}{fit}\right) + \sum_{i=1}^{4} p(unfit).p(\frac{x_i}{unfit})} \quad (4)$$

TABLE I.   **ATTRIBUTE PRECEDENCE RELATIONS OF FITNESS AND UNFITNESS**

Sl. No.	X1	X2	X3	X4	P(fit | x)	P(unfit | x)	Avg(x1 | fit)	Avg(x2 | fit)	Avg(x3 | fit)	Avg(x4 | fit)	Avg(x1 | u nfit)	Avg(x2 | u nfit)	Avg(x3 | unfit)	Avg(x4 | unfit)	Attribute Precedence Relations of Fitness	Attribute Precedence Relations of Unfitness
1	-7	4	1	5	0.82	0.18	0.65	0.40	0.73	0.56	0.35	0.60	0.27	0.44	x2<x4<x1<x3	x3<x1<x4<x2
2	-5	5	2	4	0.90	0.10	0.75	0.60	0.87	0.75	0.25	0.40	0.13	0.25	x2<x1<x4<x3	x3<<x1<x4<x2
3	1	5	1	3	0.82	0.18	1.00	0.60	0.73	0.00	0.00	0.40	0.27	1.00	x4<x2<x3<x1	x1<x3<x2<x4
4	-3	7	3	8	0.99	0.01	1.00	0.95	1.00	0.94	0.00	0.05	0.00	0.06	x4<x2<x1<x3	x1<x3<x2<x4
8	-5	5	2	4	0.90	0.10	0.75	0.60	0.87	0.75	0.25	0.40	0.13	0.25	x2 x1<x4<x3	x3<x1<x2<x4
10	7	8	3	9	0.99	0.01	0.97	0.94	0.87	1.00	0.03	0.06	0.00	0.00	x2<x1<x4<x3	x3<x4<x1<x2
11	7	7	2	9	0.98	0.02	0.97	0.95	0.87	1.00	0.03	0.05	0.13	0.00	x2<x1<x3<x4	x4<x1<-x2 x3
12	1	6	2	8	0.97	0.03	1.00	0.79	0.87	0.94	0.00	0.21	0.13	0.06	x3<x2<x1<x4	x1<x4<x3<x2
13	1	6	2	9	0.97	0.03	1.00	0.79	0.87	1.00	0.00	0.21	0.13	0.00	x2<x3<x4<x1	x1<x4<x3<x2

These attribute precedence relations ordered in terms of fitness or unfitness, obtained from the above proposed Feature Extraction modeling open the dimension of decision making tasks in the direction of individual student's counseling.

3. Results due to above set of experiments:

In order to arrive at performance evaluation of the proposed setup, it was decided to revisit the problem using one of the popular feature extraction model 'RELIEF'. The RELIEF algorithm makes use of p-dimensional Euclidean distance to select 'near-hit' and 'near-miss' instances from the training data set. For the current domain,' Near-hit' and 'Near-miss' instances are defined as training instances (students from passed out batches) closest to the test instance but falling in 'pass' and 'fail' categories respectively.

These components were computed as a part of preparation for further set of experiments described below. Revisiting the logic formulation by Kira and Rendell(1992), the weights upon each of the participating attributes in the experimental feature vector were computed in equation

Two approaches were conceptualized for performing weight initialization step which are prior probabilities of training instances and computing weights in normalized scale.

Upon comparing the attributes precedence relations generated with those generated by RELIEF approach (due to both the type of weight updation methods) in RELIEF FE modeling). Following statistic were obtained as model accuracies for the experiment done upon 4 attributes, 6 attribute respectively.

TABLE II.   **PERFORMANCE COMPARISION**

Experiment ID	Data Sets		Modelling Attributes	Accuracy (%)	Accuracy(%)
Model Type	**Training tuple count**	**Test tuple Count**	**(Proposed FE Model)**	**Comparison with RELIEF weights (normalized)**	**Comparison with RELIEF weights (prior-probabilities)**
4-TRIBUTE MODEL	87	**20**	Attendance, Assignment Credit, Internal Score, Subject Count	83%	84%
6-TTRIBUTE MODEL	87	20	Attendance, Assignment Credit, Internal Score, Subject Count, Lab Credit, previous	60%	58.33%

Extended Experiments

The above processing sequence was extended further to analyze precedence relations of fitness with precedence relations of unfitness unlike the previous modeling accuracy figures that were obtained by taking only precedence relations of fitness, it was decided to come out with an optimal precedence sequence due to both fitness and unfitness relations.

3.1 Attribute Precedence Relations

When the feature extraction modeling was performed for 6-attributes, as defined in section 2, the relative fitness probabilities namely average fit(x_1), average fit(x_2), average (fit(x_3)) and average (fit(x_4)) were computed owing to these six attributes, as a whole contributed to attribute precedence relations of fitness in increasing order of their computed values. Similarly, attribute precedence relations of unfitness were also generated from average unfit (x_i) probabilities for the above mentioned six attributes as shown in table 3.

TABLE III.   **OPTIMIZED ATTRIBUTE PRECEDENCE RELATION**

Tuple ID	Attribute Precedence Relations of Fitness	Attribute Precedence Relations of Unfitness	Attribute Precedence of Unfitness (Reversed) ≡ Equivalent Attribute Precedence of Fitness
1	x2<x4<x1<x3<x5<x6	x6<x5<x3<x1<x4<x2	x2<x4<x1<x3<x5<x6
2	x5<x2<x1<x4<x6<x3	x3<x6<x1<x4<x2<x5	x5<x2<x1<x4<x6<x3
3	x4<x5<x6<x2<x3<x1	x1<x3<x2<x6<x5<x4	x4<x5<x6<x2<x3<x1
4	x5<x4<x2<x1<x3<x6	x1<x3<x6<x2<x4<x5	x5<x4<x2<x6<x3<x1
5	x4<x6<x3<x5<x2<x1	x1<x2<x5<x3<x6<x4	X4<x6<x3<x5<x2<x1
6	x4<x5<x2<x6<x1<x3	x3<x1<x6<x2<x5<x4	X4<x5<x2<x6<x1<x3
7	x3<x5<x2<x6<x1<x4	x1<x4<x6<x2<x5<x3	X3<x5<x2<x6<x4<x1
8	x2<x1<x4<x5<x3<x6	x6<x3<x1<x4<x5<x2	x2<x5<x4<sx1<x3<x6
9	x4<x5<x2<x1<x3<x6	x3<x6<x1<x2<x5<x4	X4<x5<x2<x1<x6<x3
10	x5<x2<x1<x3<x4<x6	x3<x4<x6<x1<x2<x5	x5<x2<x1<x6<x4<x3
11	**x6<x3<x5<x2<x1<x4**	**x4<x1<x2<x5<x3<x6**	**X6<x3<x5<x2<x1<x4**
12	**x6<x2<x3<x4<x5<x1**	**x1<x5<x4<x3<x2<x6**	**X6<x2<x3<x4<x5<x1**
13	x5<x2<x3<x1<x4<x6	x1<x4<x6<x3<x2<x5	X5<x2<x3<x6<x4<x1
14	x5<x2<x3<x1<x4<x6	x1<x4<x6<x3<x2<x5	X5<x2<x3<x6<x4<x1
15	x4<x2<x5<x3<x1<x6	x6<x1<x3<x5<x2<x4	X4<x2<x5<x3<x1<x6
16	x4<x2<x3<x5<x1<x6	x1<x6<x5<x3<x2<x4	X4<x2<x3<x5<x6<x1
17	x5<x3<x2<x6<x4<x1	x1<x4<x6<x2<x3<x5	X5<x3<x2<x6<x4<x1
18	x5<x2<x3<x6<x4<x1	x1<x4<x6<x3<x2<x5	X5<x2<x3<x6<x4<x1
19	x4<x5<x2<x1<x3<x6	x6<x3<x1<x2<x5<x4	X4<x5<x2<x1<x3<x6
20	x1<x6<x5<x4<x2<x3	x3<x2<x4<x5<x6<x1	X1<x6<x5<x4<x2<x3

3.2 Optimal fitness evaluation

In order to compute optimal fitness evaluation, the following logistics was adopted:

- Initially the Attribute precedence relation of unfitness is converted into equivalent attribute precedence relations of fitness by simply generating the increasing order of attributes so that least unfit attributes becomes most fit in equivalent relations vice-versa.
- From the two sets of fitness precedence relations,(column 3 and table 3) the attributes with consistent position were identified. The consistence position were decided either as exact corresponding position 'j' occupied by attribute x_i in both the relation or at the most occupying a combination of adjacent position such as (j,j+1 j-1, j).
- If an attribute xi doesn't occupy any of the above valid combination of positions then, the attribute is said to be in in conflicting position. At this point the positions from the equivalent fitness relation are retained for such attributes as highlighted in yellow in table 3and column 3.

4. Performance model comparisons:

Optimal fitness evaluation comes out with increased accuracy of 4 attribute mode and 6 attribute model. The result after comparison with RELIEF shows in table 4(column 4 and 5).

TABLE IV.　　OPTIMIZED PERFORMANCE COMOARISION

Experiment_ID	Data Sets		Modelling Attributes	Accuracy (%)	Accuracy (%)
Model Type	**Training tuple count**	**Test tuple Count**	**(Proposed FE Model)**	**Comparison with RELIEF weights (normalized)**	**Comparison with RELIEF weights (prior-probabilities)**
4-ATTRIBUTE MODEL	87	**20**	Attendance, Assignment Credit, Internal Score, Subject Count	83%	84%
6-ATTRIBUTE MODEL	87	20	Attendance, Assignment Credit, Internal Score, Subject Count, Lab Credit, previous	63.33%	62.49%

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IMAGE CAPTIONING USING DEEP LEARNING

[1]Mr. Dhirendra Parate,   [2]Mr. Sushil Kumar Dubey,   [3]Mrs. Minu Choudhary
[1]Assistant Professor, Department of Computer Science , Sai College , Sector-6, Bhilai, Chhattisgarh, India,
[2]Assistant Professor, Department of Computer Science, Sai College, Sector-6, Bhilai, Chhattisgarh, India,
[3] Assistant Professor, Department of Computer Science, Rungta College of Engineering & Technology, Bhilai
Email – [1]dhiru311991@gmail.com, [2]sushilkumardubey2001@gmail.com, [3]minukum@gmail.com

Abstract: *The rapid growth in the availability of the Internet and Smartphone's has resulted in the increase in usage of social media in recent years. Hence, this increased use has led to the exponential growth of available digital images. Therefore, Image Captioning Systems plays a major role in captioning images relevant to the object detection. These systems should also be able to handle the massive data growth and utilize emerging technologies, such as deep learning and image captioning. In the past research, this report will also analyse various gaps and outline the role of image captioning in these systems. Additionally, this report proposes a new methodology using Image Captioning to caption images and presents the results of this method, along with comparing the results with past research.*

Keywords: *Image Captioning, Deep Learning.*

INTRODUCTION:

Image captioning is the process of generating text for images. This process involves the identification of artifacts in photographs and the creation of corresponding descriptions. The advancement in technologies in the recent days in Artificial Intelligence and Computer Vision such as processing power and large Image datasets have facilitated the research in Image Captioning. Natural Language Processing is employed alongside Computer Vision to get captions. Image captioning is based on the development of a model using both images and languages. Image Captioning is predominantly used in image search applications, robotics, social networks and helps in conveying information to visually challenged people. Now, research in image captioning has increased due to the advancement in neural networks and processing power. Initially, image captioning started with object detection in images. Captions were generated with the help of datasets using the nearest neighbour algorithm. Recently, captions are generated using deep learning.

Features in Images:

Features determine the property of any data within the dataset. A dataset of images doesn't have features explicitly and hence should be extracted from the pictures. Based on the problem, machine learning models and computational limitations, features are chosen to predict the class of data.

Histogram:

Histogram of a picture denotes the frequency of pixels belonging to a special colour or intensity ranges in a picture. The histogram are often a colour histogram if it denotes the distribution of tonal colours in a picture. In an intensity histogram, the frequency of pixels in different levels of intensity is extracted. Intensity histogram is used in monochromatic images. A histogram is represented as a bar graph where X-axis denotes the different intensity or colour tones in an image and Y-axis denotes the number of pixels in the image with a particular tone. For image processing problems these various tonal ranges and their corresponding pixel values are taken as functions.
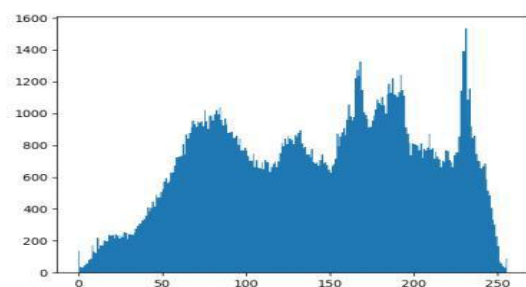

Figure 1: Histogram of an image [26]

Histogram of Oriented Gradients

The Histogram of Oriented Gradients (HOG) makes use of the situation of objects in a picture and its shape and are represented as oriented gradients. These oriented gradients are determined from the form of an object and also

provides the sting directions. In this method, the image is split into cells, and pixels within these cells are represented as HOG. All the tests from local cells are concatenated by the final HOG descriptor.
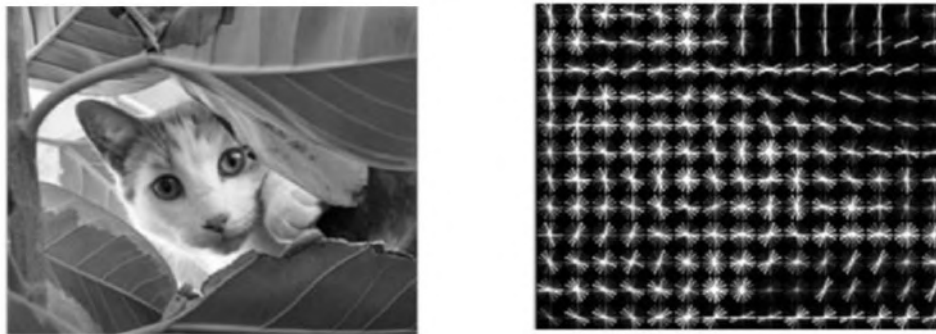

Figure: Image and its HOG descriptor

This algorithm follows the following steps to return features:
- o   Computation of gradients
- o   Cell histogram creation
- o   Normalization of gradient strengths
- o   Block Normalization
- o   Object Recognition

Edges

Edges of a picture are found by the sudden change of brightness or colour a picture. Edge detection helps in various object detection problems. The edge detector helps find the boundaries of objects in a picture. This provides features which are of more importance and relevance to the matter thereby saving computational time. Edge detection methods are often grouped into two categories: search-based and zero-crossing. In a search-based approach, the edge strength in the image is computed by taking a first-order derivative, and then by finding the local maxima, the direction of the edges is found. In the zero-crossing method, zero-crossing of edges are found by taking a second order derivative computed for edge detection. Smoothing is applied on the images as part of pre-processing in edge detection and Gaussian smoothing approach is used predominantly.
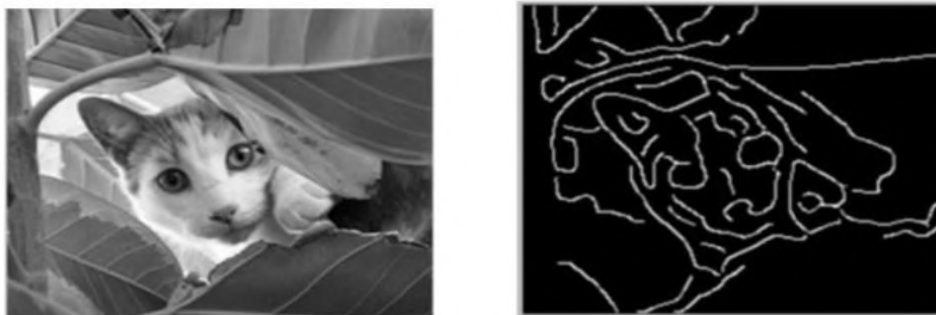

Figure 3: Image and its canny edges

Among various edge detection algorithms, canny edge detector acts because the benchmark for other edge detection algorithms. In this approach, an optimal smoothing filter springs by considering detection, localization and minimization of responses to a foothold. In this approach, edge points are found in pre-smoothing filters by finding the local maximum within the gradient direction.

Object Detection

Object detection is the process of detecting or locating objects in an image. Any image captioning system depends on the principle of object detection to get captions. Object detection using machine learning makes use of features extracted from one of the approaches mentioned above or any other feature extraction methodology from images. To perform classification, these features are then fed into a machine learning model such as Support Vector Machine (SVM). Features are not specified in object detection using deep learning and perform complete object detection typically using Convolutionary Neural Networks (CNN).Some of the deep learning algorithms used in objects detection are RCNN, YOLO, SSD, etc.
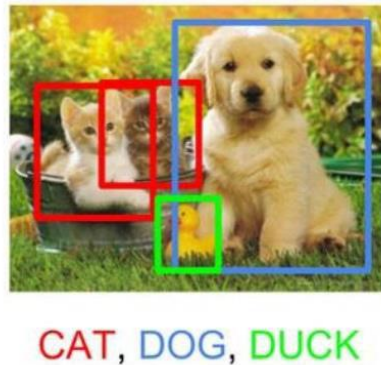
Figure 4: Object detection in an image

Image Segmentation

Image segmentation is that the process of segmenting a picture into smaller regions and classifying those regions to an object. Segmentation makes a picture easier to research because the image is represented during a more meaningful form. This process typically assigns a label to every pixel in the object, and all the pixels having the same label have the same characteristics which can help in boundary detection and object detection.

Figure: Segmentation in an image

Some of the common approaches used in image segmentation are:

1. Thresholding
2. Clustering
3. Motion and interactive
4. Region-growing methods
5. Partial differential equation-based methods
6. Graph partitioning methods

Deep Learning in Image Captioning

Most of the image captioning processes uses deep learning models to generate captions. Image captioning system typically has two steps:

1. Feature Extraction
2. Caption Generation

The above steps are implemented using neural networks. Features are extracted from images using Convolution Neural Networks (CNN) and captions are generated from features using Recurrent Neural Networks (RNN).

Neural Networks

Neural networks are primarily inspired by biological neural networks in computation and Artificial Intelligence. They serve as a system that learns from continuous data, and have no algorithm for predicting performance. The neural network learns from image training data in image detection problems, and uses this knowledge to classify a new image. Therefore a neural network can work without prior knowledge in image classification problems. An Artificial Neural Network (ANN) consists of nodes or artificial neurons inspired by the synapses inspired by biological neurons and edges. Each edge transfers signals between neurons, and each neuron emits whenever the signal is greater than a given

threshold. These edges have weights, and with continuous learning, the weights among the edges are recomputed. These weights determine the strength of the signal passing through an edge.
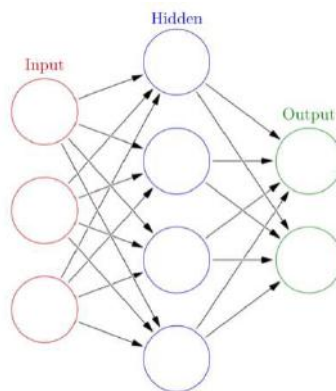

Figure 6: Artificial Neural Network

Convolutional Neural Networks

A Convolutional Neural Network (CNN) is a deep, feed-forward neural network which is mostly used in image processing applications. CNNs require little pre-processing as it learns the features by itself from the given data. A CNN contains an input layer, an output layer and several hidden layers.

Recurrent Neural Networks

A Recurrent Neural Network (RNN) will have nodes linked like a series in the form of a directed graph. It makes it easier for RNN to manage series operations such as time sequence, identification of handwriting and sequence expression. RNNs can remember important information about the received input and thus allow them to predict the next item in a sequence.
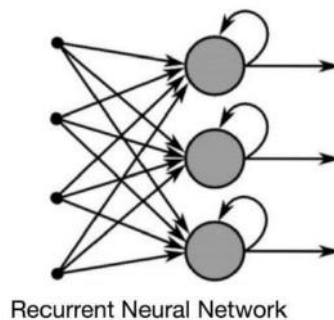

Figure: Sample Recurrent Neural Network

RNN usually features a STM and hence cannot handle very long sequences. Long STM (LSTM) network extends RNN which extends the memory of RNN. Therefore, LSTM are often employed in problems with sequences having long gaps. LSTMs can remember the previous inputs for an extended duration because it stores all those data into a memory. In image captioning problems, captions are generated from image features using RNN alongside LSTM.

REVIEW OF LITERATURE:
Approaches in Image Captioning

Image captioning problem primarily depends on two important steps: Featureextraction from images and Caption Generation.

Attributes for Image Captioning

For extraction of features, Wang et al.[5] use the Convolutional Neural Networks (CNN). The skeleton sentences and respective attributes are extracted in the training data. Two Long Short-Term Memory (LSTM) units are used where one is used to generate skeleton sentences from the image and the other one is used to extract attributes from the image. For any given test data, first a skeleton sentence is generated, then attributes are added to the existing skeleton sentence after extraction of the attribute. The final sentence contains the attributes along with the skeleton phrase. Similar to [15] also uses attributes to generate captions. In [15], CNN Pre-trained on single label images is used and this is fine-tuned with a multi-label image dataset. For a given test image, the attributes are generated as multiple regions and fed into the combined CNN which is aggregated with max pooling which can generate multi-label captions for the given test image. [20]

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Localized Features in Image Captioning

Many approaches to image captioning use image sub blocks as features and generate captions for those features, and generate captions for the image. A similar approach is used in [14] where the image is segmented hierarchically, and each segment is passed as a feature into a CNN which is pre-trained for object recognition. This method uses a visible encoder which encodes the visual features and passes this into a scene specific decoder which is employed for generating text. There is also a scene vector extractor which extracts the worldwide context of the image. This scene vector facilitates text generation from the decoder to align with the worldwide context of the image.

Probabilistic approach

Image captioning with probabilistic approach assigns a probability for each caption for a given image and the sentence with the highest probability to an image is returned as a caption. Dai et al.[16] use a probabilistic approach in which each image in the training data is assigned the highest probability to its corresponding caption and low probability values to captions of other images in the dataset. Whenever a test image is passed, the new model should give a higher probability of positive pairs of image and caption and lower probability value to negative pairs.

Vedantam et al.[9] used a probabilistic approach to generate the context-aware captions. Here they have used emitter suppressor beam search algorithm on RNNs to generate captions. First, a caption is generated describing an image, and with a discriminator class trained on the model, common tags or words in the caption and the discriminator class are suppressed. A new set of captions with discriminating tags are generated for the image based on the initially emitted caption and deleted caption.

Similarly, in [9] probabilistic approach is used for the various semantic concepts present in an image instead of captions. For a given image, the probability of semantic concepts or tags in an image are generated using a CNN and these tags are passed as parameters into LSTM where captions are generated based on the probabilities of individual semantic concept in the image. Semantic Compositional Networks (SCN) are extended along with the weight matrix of LSTM to make them tag-dependent to generate captions.

Stylish Caption Generation

Other than the usual caption generation, certain approaches generate captions in a stylish manner. Chuang et al.[11] have proposed a StyleNet framework which is aggregated with three LSTM networks. Features from images are extracted using CNN and they are passed into LSTM to generate captions. In this approach, they use a special LSTM called Factored-LSTM. All the three LSTMs share the same parameters but differ in using the style specific matrix such as factual or romantic or humorous style. Based on the LSTMs, the corresponding captions are generated.

Dense Caption Generation

In image captioning, generating captions with dense descriptions have been growing in recent times. Yang et al.[21] use a faster R-CNN in the first stage through which regions are extracted. In the second stage, using the features of the region, detection score and bounding boxes of the regions are generated and fed into LSTM to generate captions for each region. The LSTM generates one word at a time and uses the current word prediction to generate the next word.

Similar to [12], Krause et al.[13] generates dense captions but by using a hierarchical approach. As in the previous approach, regions are detected in images using CNN but after this, a region proposal network is also used which detects regions of interest. These region features are projected to a pooled vector where the image is converted to a compact vector and fed into a Hierarchical Recurrent Network which comprises a sentence RNN and a word RNN. Sentence RNN is used to find the number of sentences to be generated for an image and word RNN uses these values to generate sentences.

Image Captioning By Parallel Training

Some image captioning networks use multiple training approaches in different layers of a neural network to generate captions. Venugopalan et al.[14] have proposed a Novel Object Captioner (NOC) which can learn from multiple sources and was intended to detect objects which were not present in the training data. This model was simultaneously trained on a single labelled dataset (Image Net) and an image captioning dataset (MSCOCO) and used a language model LSTM. Image loss, text loss and image text loss are computed using these models and captions with low loss values are generated for a given test image. Liu et al. [15] also train the model using two different data: a single label dataset and an image captioning data in a model using CNN and RNN. There is an interface of semantic concepts in between CNN and RNN which allows for parallel training of the model with the unary model consisting of single label data and a relational model consisting of image captions. Based on the

experiments by Liu et al. the intermediate layer improves the performance of the model compared to other CNN RNN image captioning models as it almost decouples the interactions between CNN and RNN.

Methodology

My research focuses on implementing an Image Captioning System. Deep learning will be used to implement image captioning. Usually, image captioning algorithms should include object detection, image creation and feature generation captions.

Image Captioning System

An image captioning system should be capable of predicting the most likely caption for a given image. To achieve this, the system is trained with data-sets for image captioning. Convolutionary Neural Networks (CNN) is used to derive image features, and these features are mapped to the respective captions during preparation.

The algorithm is implemented as follows:

- The objects in an image are detected using CNN.
- The features of an image are also generated using CNN.
- Captions are generated using the features generated by CNN. RNN along with LSTM is used to generate captions for the images.
- CNN pre-trained with image captioning datasets like Flickr8k[16] will be used.
- The above steps are done on both image dataset and visual query to generate captions.
- Similarity calculation is done on word features generated from the query as well as image dataset.
- The images containing captions with highest similarity score to the query are returned as results.

Data Preparation

Flickr8k Dataset

Flickr8k dataset [16] is a public benchmark dataset for image to sentence description. This dataset consists of 8000 images for each image, with five captions. The dataset depicts a variety of events and scenarios and doesn't include images containing well-known people and places which makes the dataset more generic. The dataset has 6000 images in training dataset, 1000 images in development dataset and 1000 images in test dataset. Features of the dataset making it suitable for this research are:

- Multiple captions mapped for a single image makes the model generic and avoids over fitting of the model.
- Diverse category of training images can make the image captioning model to work for multiple categories of images and hence can make the model more robust.

A blonde horse and a blonde girl in a black sweatshirt are staring at a fire in a barrel .
A girl and her horse stand by a fire .
A girl holding a horse 's lead behind a fire .
A man , and girl and two horses are near a contained fire .
Two people and two horses watching a fire .

Figure: Captioning by Flickr8k Dataset

Image Data Preparation

The image should be converted to suitable features so that they can be trained into a deep learning model. Feature extraction is a mandatory step to train any image in deep learning model. The features are extracted using Convolutional Neural Network (CNN) with Visual Geometry Group (VGG-16) model. This model also won Image Net Large Scale Visual Recognition Challenge in 2015 to classify the images into one among the 1000 classes given in the challenge. This model is therefore ideal to use for this project, since image captioning requires image identification.
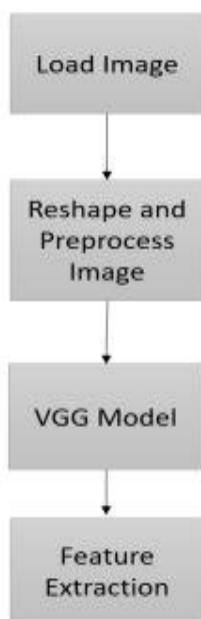
Figure: Feature Extraction in images using VGG

Caption Data Preparation

Each image Id probably is taken as key during the data preparation phase, and its corresponding captions are stored in a dictionary as values.

Data Cleaning

Raw text should be translated to a usable format to make the text dataset work in machine learning or in deep learning models.

Before using it for the research the following text cleaning steps are carried out:•Removal of punctuations.

• Removal of numbers.

• Removal of single length words.

• Conversion of uppercase to lowercase characters.

Stop words from the text data are not removed as it will hinder the generation of a grammatically complete caption required for this research Table 1 shows samples of captions after data cleaning

Original Captions	Captions after Data cleaning
Two people are at the edge of a lake, facing the water and the city skyline.	two people are at the edge of lake facing the water and the city skyline
A little girl rides in a child 's swing.	little girl rides in child swing
Two boys posing in blue shirts and khaki shorts.	two boys posing in blue shirts and khaki shorts

Table: Data cleaning of captions

Result & Discussions

Result

The model is evaluated by examining the captions generated for the test dataset. Subtitles are generated for each photo in the test dataset and compared with the actual captions for the image.

BLEU Score Evaluation

Bilingual Evaluation Understudy or BLEU score is used to evaluate the descriptions generated from translation and other Natural Language Processing (NLP) applications. The n-grams of the generated captions are compared with the n-grams of the actual reference captions and between 0 and 1. a ranking is given. Good scores are higher and close to 1.The image captions created in the model are assessed using BLEU score for the test dataset. The model achieved a BLEU-1 score of 0.59 which is near the human translation BLEU score of 0.69.BLEU-1 score represents 1-gram score, and BLEU-n score represents n-gram BLEU score. Figure shows the BLEU score obtained for a sample image in Flickr8k dataset using this model.

Figure: Input Image for BLEU scoring

Original captions
boat sail past the rise sun
sailboat in the water
sailboat in the water at sunrise
ship sail in blue sea
old ship sail at sunset

Generated Caption	sailboat in blue sea

BLEU-1	1.0
BLEU-2	1.0
BLEU-3	0.7
BLEU-4	0

Table: Sample BLEU score results

Conclusion:

Image captioning has a higher average precision than other methodologies used. The proposed method clearly shows a higher precision in identifying classes such as beach, buildings, elephants, flowers, mountains, and food compared to the other methods. Classes like Africa and Dinosaur seem to be better identified in other methodologies. This might be attributed to lack of images belonging to similar category in Flickr8k dataset

We have to realize that the images used for research have to be semantically related to those used in model training. For example, if we train our model on the images of cats, dogs, etc. We shouldn't test it on airplane images, waterfalls, etc. This is an example where the distribution of the train and test sets will be very different and in such cases no Machine Learning model in the world will give good performance.

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Fault Analysis Of Electrical Power System Using Fuzzy Logic Based On Data Mining

[1]**Ashok kumar Singh,**   [2]**Neelam Sahu**
[1]Department of Computer Science, Scholar, Dr. C.V. Raman University, Bilaspur, India
[2]Department of IT, Dr. C.V. Raman University, Bilaspur, India
[1] ashoksingh1760@gmail.com , [2] neelamsahu16@gmail.com

***Abstract:** Data mining technique can operate within a system to provide efficient on-line machine fault diagnosis over the World Wide Web. Here it has been studied the application with the data mining in power system state monitoring and fault diagnosis, presents a new type of data mining based on the fault mode analysis and the fast diagnostic reasoning algorithm, it has obvious advantages in dealing with a large number of power system data.*

***Key words:** Fuzzy Logic, Data mining, Fault Analysis, Electrical Power System.*

1. Introduction:

A fault is defined as a departure from an acceptable range of an observed variable or calculated parameter associated with equipments, that is, a fault is a process abnormality or symptom. In general, faults are deviations from the normal behavior in the plant or its instrumentation. They may arise in the basic technological equipment or in its measurement and control instruments, and may represent performance deterioration, partial malfunctions or total breakdowns. Electric power system is one of the most complex artificial systems in this world, which safe, steady, economical and reliable operation plays a very important part in guaranteeing socioeconomic development, even in safe-problem, some methods and technologies that can reflect modern science and technology level have been introduced into this domain. Relay protection is just using the sudden changes of electric to distinguish whether the power system is failure or abnormal operation. After contrasting the electric variation measurements with the electric parameters of normal system, we can detect fault types and fault locations. Furthermore, we can implement selective failure removal. Cluster analysis technology of data mining theory has been used in the literatures to resolve fault detection problem in electrical engineering.

2. Fault Analysis Based on Data Mining :

Now let us consider bus system shown in Figure 1. In the structure of electric power net-work, Bus1 appears single-phase to ground fault. By computer programs, the vector-valued of corresponding variables is only exported one times in each period. Using these actual measurement data of corresponding variable,
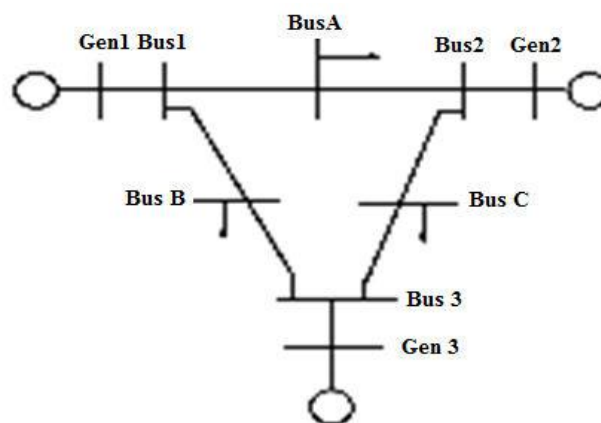

Fig. 1 Electric diagram of Bus system

we can carry through fault analysis of fault component and non-fault component (fault section and non-fault section).

The generators are the most important equipment in the energy generation process. The power system reliability, power system supply and power system stability is indexes directly affects for the generator operational conditions. For this reason, protection and monitoring equipment are increasingly employed in order to prevent fails. One of the technologies that can be employed within the purpose of predicting failures is the electric signature analysis (ESA), which consists of a set of methods and techniques that monitor the condition of electric machines by identifying patterns and deviations. It is detected by processing and analysis of voltage and current signals acquired machinery under monitoring. These techniques based on electrical signatures can be applied from the generator and primary source until the motor and load coupled.

3. Electric Signature Analyses"

Electric Signature Analysis (ESA) is the term used for all evaluations of voltage and current signals of turbo-generators. The most common analysis transforms the voltage and current signal to the frequency domain where they are analyzed. The analysis is based on two fundamental assumptions: (a) the signature of a machine with failure is different from the signature of a machine in perfect state of operation and (b) the failures are repeated with regular patterns, causing failure patterns, which can be identified and related parts of the machine. These techniques can be applied in power plant turbo-generators. CSA and the Extended Park Vector Approach (EPVA) are the methods used in this development because they have more features applicable to turbo-generators.

It might be of surprise, but electrical signals (voltage and\or current) can carry additional information about electrical and mechanical problems of generating equipment, but the machine works as a transducer for mechanical failures, allowing the electrical signals (voltage and/or current) can carry information of electrical and mechanical problems. The signals of current and/or voltage of one (or three) phases of the machine produce, after examination, the *signature of* machine, i.e., its operating pattern. This signature is composed of frequency magnitudes of each individual component extracted from their signals of current or voltage. This fact allows the monitoring of the evolution of the frequency magnitudes, which can denote some sort of evolution of the operational conditions of the turbo-generator. The response that the user wants is to know whether your turbo-generator is "healthy" or not, and what part of turbo-generator is in failure. This analysis (diagnosis) is not easily done because it involves a set of comparisons with previously stored patterns and own "history" of the turbo-generator under analysis. At this moment, usually an expert is called to produce the final diagnosis, generating command when stopping the machine. Thus, the system developed in this project for automatic diagnosis combines the history of turbo-generator, expert knowledge and failures patterns and it can be very useful for a power company.

4. Extended Park Vector Approach (EPVA):

The EPVA technique should be used to verify stator imbalances turbo-generators. However, it can only be used if the signals of voltage and/or current have been demodulated. The central idea of this technique is checking failures by the distortion of Park´s circle, i.e., more distortion in the Park´s circle more is the unbalance of the turbo-generators. The current components of the Park vector are described by i_D and i_Q:

$$i_D = \left(\frac{\sqrt{2}}{\sqrt{3}}\right) i_A - \left(\frac{1}{\sqrt{6}}\right) i_B - \left(\frac{1}{\sqrt{6}}\right) i_C$$

$$i_Q = \left(\frac{1}{\sqrt{2}}\right) i_B - \left(\frac{1}{\sqrt{2}}\right) i_C$$

Where the currents i_A, i_B and i_C are the three phases. In ideal conditions:

$$i_D = \left(\frac{\sqrt{6}}{2}\right) i_M \cos(\omega t - \alpha)$$

$$i_Q = \left(\frac{\sqrt{6}}{2}\right) i_M \sin(\omega t - \alpha)$$

For normal conditions, Park circle is centered at the origin of coordinates. The Park circle has distortions when there are abnormal conditions of operation or when mechanical or electric failures occur. However, these distortions in the Park circle are not easy to be seen or measured, hence the proposition of the Extended PVA (EPVA), observing the spectrum module of Park vector. The EPVA technique combines the robustness analysis of Park circle and the flexibility of spectral analysis. An important feature of the Park transformation process is the fundamental component of analyzed signals is erased. This fact allows the component characteristics of failure to appear with greater prominence.

5. Description of the Data Mining Algorithm:

In the first step (initialization), ranks (classes) of each attribute (input or output variables) are defined, and each interval receives an identification label. This division creates a cross-linked sample space and the next step may apply (remove equal examples). All examples within a same hyper-cube are grouped into only one. The next step is to check equal attributes or unnecessary classification (dispensable attributes). This is done in the first case by mere inspection and, in the second case, by the removal of each of them and subsequent verification of the inclusion of issues of classification.

In the context of the developed software for turbo-generator predictive maintenance, the algorithm and mathematical structures described were implemented and serve to extract knowledge of diagnostic data. Thus, the system is able to diagnose new cases on the basis of the knowledge extracted from previous cases. It is important to note that the procedure is transparent to the user, that is, it occurs within the computational package developed, activated by a button command in the program window itself and providing the user with the proper classification.

## 6. Data Mining Process for Turbo-Generator Feature Extractions:

The current development has been applied in the NTPC-Korba Thermal Power Plant, located in the Korba, Chhattisgarh (India). The NTPC-Korba has a total generation capacity equal to 340 MW, from 3 steam turbines.

7. Feature Extraction – Data Mining Process

The described algorithm has been also implemented in the computational package.The signals shown in Fig.2 are expressed by their main features, such as frequencies, amplitudes, phases, and merge to turbo-generator parameters itself. This set of data is the input data, and must be related to a type of previous operation condition: normal, abnormal, failure #1, failure #2, and so on. An example of the input signal database is shown in Table 1. With the database the data mining process starts with the definition of labels (classes or ranks) for each attribute (input variable).
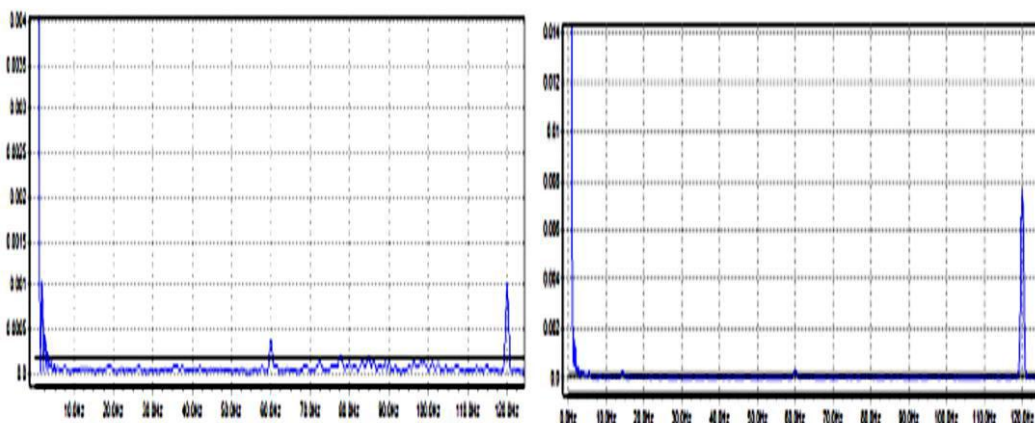
(a) EPVA to current and voltage
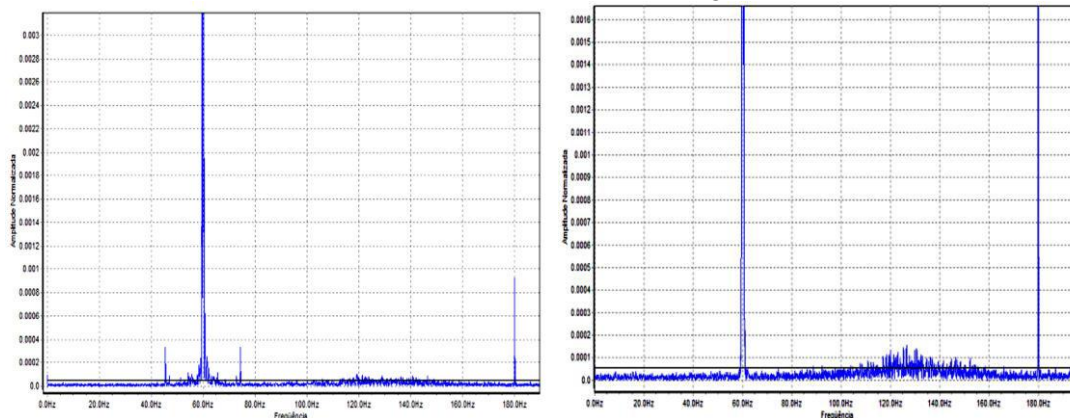
(b) CSA signal,   **(c)** VSA signal.
Fig. 2 Acquired Signals

The program contains a pre-set of labels for each attribute. This pre-set has been adjusted during the test phase of the prototype in the power plant. However, if the user would change the interval of these labels it is possible. However, in the daily operation, this pre-set of labels remains constant.

Table 1 Partial example of the signal acquisition database

Acquisition	Sample Frequency(Hz)	Number of Samples	Time of Sample(s)	Spectral Definition(Hz)	Total Time(s)
	8193		2,7	0,3704	27
1	1638	21845	13,3	0,0752	37
	8193		16	0,0625	40
2	1638	131072	80	0,0125	104
	8193		16	0,0625	40
3	1638	131072	80	0,0125	104

Internally, the program merges the equal examples, verifies dispensable attributes, computes the core and the reduce sets, and finally produces the final set of rules. And academic example of this process is presented for a small database (part of the real database). Table 2 shows the data after the application of labels. Ten examples are shown with the following input attributes: frequency, amplitude, TDH (harmonic distortion level), and distortion (from Park Vector circle). The possible outputs are "normal", "warning", and "danger".

Table 2 Partial example of the signal acquisition database

Example	Frequency	Amplitude	TDH	Distortion	Output
1	Low	Normal	Normal	Normal	Normal
2	Low	Medium	Medium	Normal	Normal
3	Low	Medium	Normal	High	Normal
4	Medium	Medium	Normal	Medium	Warning
5	Medium	Medium	Normal	High	Warning
6	Medium	High	Normal	High	Danger
7	Low	Medium	Medium	Normal	Normal
8	Medium	Medium	Normal	Medium	Warning
9	High	High	Medium	Medium	Danger
10	Medium	High	Normal	Medium	Danger

After the transformation from numbers in labels of the attribute values, the second step of the algorithm can be performed - to remove equal examples. In this case, examples 2 and 7 are equal, and 4 and 8 also. Then one of them can be removed without any type of information lack, resulting in Table 3

Table 3 Original table of examples without repetitions

Example	Frequency	Amplitude	TDH	Distortion	Output
1	Low	Normal	Normal	Normal	Normal
2	Low	Medium	Medium	Normal	Normal
3	Low	Medium	Normal	High	Normal
4	Medium	Medium	Normal	Medium	Warning
5	Medium	Medium	Normal	High	Warning
6	Medium	High	Normal	High	Danger
9	High	High	Medium	Medium	Danger
10	Medium	High	Normal	Medium	Danger

In order to verify possible dispensable attributes, each attribute is removed and a verification of possible mistake classification is performed. In this case, for instance, the attribute "frequency" is not dispensable because without it examples 2 and 5 present two different outputs for the same input. The same occurs with the attributes "amplitude" and "distortion". However, the attribute "TDH" is dispensable in this case because without this attribute the table remains consistent (Table 4).

Table 4 Original table of examples without repetitions and with the dispensable attributes

Example	Frequency	Amplitude	Distortion	Output
1	Low	Normal	Normal	Normal
2	Low	Medium	Normal	Normal
3	Low	Medium	High	Normal
4	Medium	Medium	Medium	Warning
5	Medium	Medium	High	Warning
6	Medium	High	High	Danger
9	High	High	Medium	Danger
10	Medium	High	Medium	Danger

At this moment, the database is ready to compute the core set. Removing each value of each example and verifying the mistake in the classification, it is possible to computer each element of the core set. If the lack of the element creates a mistake, this element takes part of the core set, otherwise not. Table 5 presents the core set of the illustrative database example.

Table 5 Core set.

Example	Frequency	Amplitude	Distortion	Output
1	-	-	-	Normal
2	-	-	-	Normal
3	Low	-	-	Normal
4	-	Medium	Medium	Warning
5	Medium	Medium	-	Warning
6	-	High	-	Danger
9	-	-	-	Danger
10	-	High	-	Danger

Then the reduce set can be computed. It is made including the minimum number of attributes with the core to represent the example. In this case, it results in 11 examples (rules). Finally, the final set of rules is composed by 7 different rules, shown in Table 6.

Table 6 Reduce set and final set of rules.

Rule	Example	Frequency	Amplitude	Distortion	Output
1	1	Low	-	-	Normal
2	1	-	Normal	-	Normal
1	2	Low	-	-	Normal
3	2	-	Medium	Normal	Normal
1	3	Low	-	-	Normal
4	4	-	Medium	Medium	Warning
5	5	Medium	Medium	-	Warning
6	6	-	High	-	Danger
6	9	-	High	-	Danger
7	9	High	-	-	Danger
6	10	-	High	-	Danger

An example of the produced *if - then* rule of the developed system is:
If *IPV ≥ -25db* **then** *output = "warning"* **and** *failure = "stator current unbalance".*
In English language:
If the current Park Vector component is equal to or bigger than -25 db then the operational condition is "warning" and the possible failure is "stator current unbalance".

Rule-extraction algorithm is usually run once a quarter. The most important part of the process to the users is the analysis of the current signals, it means, the operational condition of the turbo-alternator at this moment. For acquired current signals pass by the rule set and a condition of the turbo-alternator is presented to the operator. The major part of the time the answer of the program is "Normal"; however, when an abnormal situation is detected a failure pattern is shown to the operator. An example of this is presented in

Fig.3 Example of abnormal situation and warning and danger levels.

Fig.3. This figure shows this abnormal situation with two pre-set lines. The yellow line expresses the warning level and the red line express a danger level.

Data mining is 'the automated extraction of hidden predictive information from databases'. Data mining techniques have been applied to transformer monitoring, load forecasting, critical bus identification, load characterization and various other applications. With the advent of microprocessor relays, sophisticated electronics built into the relays provide immediate data relative to potential and current transformer (PT/CT) fault magnitudes, fault location performance measurements, dc system characteristics and circuit breaker status. The vast amount of power system data available requires new techniques for extracting relevant information for study. The data are archived in event files for operational analysis. The process of data mining provides information for assessing relay settings and applies to any text-based data file. After downloading the events, analysis can focus on predetermined goals, such as finding the fault contribution for various nodes in the system and determining if the relays operated correctly for the given conditions. Even with overwhelming amounts of data now available, the process of storing, mining and analyzing this data can ultimately improve protection quality.

8. Fault Inducing Trip vs. Temporaries

An event report is triggered when any one of the over current elements pick up a fault. Tripping is initiated when the trip output is asserted for a minimum of 4 cycles. It was observed that many of the fault pickups were temporary, i.e., they do not cause the relay to trip. Hence the relay resets when it times out. This indicates that the current values were high enough for the relay to pick up the change in current level and trigger an event record. The fault-induced trips usually ranged in the 20-40% range for the substations studied. The SEL software is used to observe the

oscillatory graphs of all events. It shows all the 40 quarter cycles, current and voltage magnitudes and the relay elements in action.

9. Fault Classification

The WEKA software is used to classify faults. "WEKA" stands for the 'Waikato Environment for Knowledge Analysis'. One can preprocess a dataset, feed it into a learning scheme, and analyze the resulting classifier and its performance-all without writing any program code at all. The learning methods are called classifiers. A decision tree (J48), cross fold validation or a multilayer perception can be used to classify instances.

A. Data preparation

Most recorded data sets will naturally have some missing values. Using WEKA software one can easily replace missing values. They are replaced by the global mean or mode of the training data before the model is built. Replace Missing Values Filter substitutes the mean for numeric attributes.

B. Data format

The data is stored in a spreadsheet. However, WEKA expects it to be in ARFF format. An ARFF (Attribute-Relation File Format) file is an ASCII text file that describes a list of instances sharing a set of attributes. In this format, it is necessary to have the type information about each attribute which cannot be deduced from the attribute values. Before any modeling technique is applied to the data, it must be converted to the ARFF form. This can be done easily since the bulk of an ARFF file consists of a list of all the instances, with the attribute values for each instance being separated by commas. Microsoft EXCELc' allows exporting the data into such a file in comma separated format. Once this is done, the file can be loaded into a text editor or a word processor. This is followed by adding the dataset's name using the relation tag, the attribute information using @attribute, and a data line creates the file in the 'arff format'. The data 'faultweka' has been filtered for replacement of missing values. Variables I_R, I_A, I_B, I_C, V_A, V_B, V_C, and FAULT are the attributes used. The variable 'FAULT' is the target attribute, which takes the values of 'AG, BG, CG, AB, BC, CA, ABG, BCG, CAG, ABC, ABCG'. The values of FAULT are based on the desire to classify faults according to 'phase A to Ground,' 'phase B to Ground,' etc.

C. Neural networks and decision trees

Two different techniques are applied to model the data, decision trees and neural networks. Both techniques have their own merits and demerits. The production rules are specified in L -> R, where L is a conjunction of attribute based tests and R is a class. Decision trees and neural network modeling techniques are examples of 'supervised learning'. Supervised learning, the process learns how to predict the value of the target variable, which is 'FAULT' in our case, based on the predictor variables. Since our goal is to predict the type of fault, supervised learning is used. Exhibiting a layered network of highly interconnected artificial neurons, a neural network generally consists of an input layer, hidden layer(s) and an output layer. The weights of interconnections are adjusted or trained by the back propagation of error generated in the feed forward step. The neural network can be used to predict actual values, and not just classes. In the fault classification context however, the predicted class is encoded in some way.

10. Data mining for turbo alternator fault diagnosis

The unstructured textual data of fault-condition and checkpoint information of the customer service database provides useful turbo alternator service information. A data mining technique based on the integration of neural network, case-based reasoning, and rule-based reasoning has been applied to the database to support intelligent turbo alternator fault diagnosis.

Data mining process

The first extracts knowledge from the database to form a knowledge base that contains the neural network models and a rule-base. The neural network models and the rule-base work within the CBR cycle (retrieve, reuse, revise, and retain) to support the second, which uses the four stages of CBR cycle to diagnose reported problems. It accepts user's problem description as input, maps the description into the closest fault-conditions of the faults previously stored from the knowledge base, and retrieves the corresponding checkpoint solutions for the user. The user's feedback on the fault diagnosis process is used to revise the problem and its solution. The new result is ultimately retained as knowledge for enhancing performance of future problems.

Knowledge extraction process

The knowledge extraction process for retrieving information from the unstructured textual data of the fault-conditions and checkpoints in the customer service database. There are two major generation steps: neural network model and rule base. The neural network model generation phase extracts the knowledge from the fault-conditions to train the neural network to build neural network models for classification and clustering. The fault conditions in the

database are first pre-processed to extract keywords. The preprocessing uses a word-list, stop-list, and algorithms from Word net. The extracted keywords are used to form weight vectors to initialize the neural networks. Then, the neural networks are trained to generate the neural network models. Two types of neural networks were investigated: the supervised Learning Vector Quantization (LVQ3) neural network and the unsupervised Kohonen Self-Organizing Map (KSOM) neural network. LVQ3 and KSOM are used as classification and clustering techniques for intelligent fault diagnosis, respectively. Classification techniques are used to put an instance of a new fault description into one of the known classes of faults and then use the suggested solution of the known fault for the current problem. Clustering technique can be used to extract information from the database to form groups of similar faults and then define a new problem instance in one of the clusters. The rule base generation process involves the extraction of knowledge from the checkpoint solutions of the fault-conditions to generate a rule-base to guide the reuse of checkpoint solution in the most effective way. Using these two types of rules, the rule-based inference engine under the CLIPS environment can provide a step-by-step guide to the user in diagnosing a fault condition.

11. Data mining based Fault Detection

A. The Gross Structure Design

In recent years, data warehouse technology is a better application, some enterprises set up their own data warehouse and have accumulated a large amount of data, however, data warehouse to be used as a database in some enterprise, data warehouse has not play an important role in effect. Therefore, people began to study in order to find useful knowledge from the huge data warehouse and to improve the utilization of information. A large number of valuable knowledge would be found from fault information for production, management and for maintenance equipment and circuitry to use for reference, so that, the accuracy of fault diagnosis is improved and the time of fault remove is shorten. Data mining process in the fault information was shown in Fig.4.
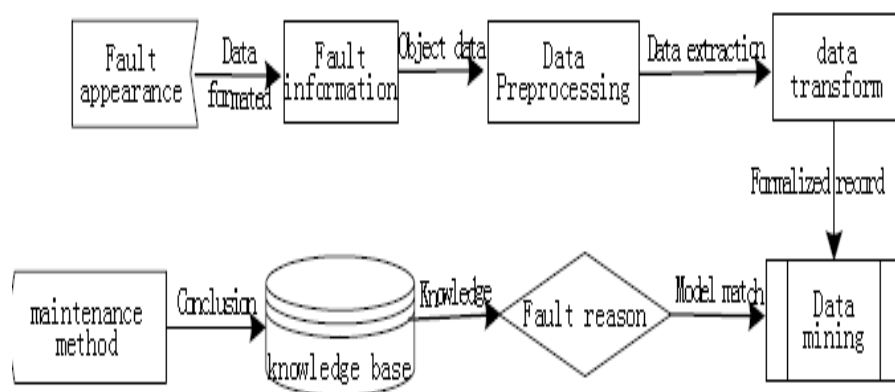

Fig.4 The data mining process of Fault information

The main objective of data mining is to use the correlation of the fault information in data warehouse in order to find the information which is hidden and divinable and understandably and valuable, and to find the model which is easy understand by people to describe the data in the data warehouse. The data was collected according to fault model which was cleaned up and a fairly standard, it is easy for enterprises to establish knowledge dimension table and the relationship rules dimension table, in the data warehouse can be found a large number of knowledge about equipment performance, operation status, scheduling scheme, the cause of the fault, service decision, etc., the knowledge play the role of reference and guidance for continuous improving circuit design, process management, power load forecasting, power market analysis, improving the quality of service in enterprise.

B. Data mining rules

The knowledge characteristics of diagnosis field and the equipment fault mode analysis are provided by a variety of technical parameters or experience, it combined with fuzzy logic methods, production rules based on the uncertain knowledge reasoning were adopted, the general form of the rules as follows:
IF P THEN Q, in which $P = P_1 (C_1)$ AND / OR $P_2 (C_2)$ ... $P_n (C_n)$

P is fault appearance, it could be a simple fault appearance, also, it could be a logical combination by a number of a simple fault appearance, for example, $P = P_1(C_1)$ AND $P_2 (C_2)$ OR $P_3 (C_3)$; For each fault appearance P_1, P_2, ..., P_n can be assigned a corresponding confidence value C_1, C_2, ..., C_n, it is the percentage of the credibility of the fault appearance (probability of the fault appearance); Q is the real reason for the fault ,and it may be one or more conclusions. A new type of reasoning mechanism was adopted in the fault mode analysis which is inexact matching based on data mining, and it searches the rules which matches the terms in line with the known, It can generate many different fault conclusions, it is fit for multi-fault diagnosis of intelligent systems.

C. Matching fault mode, to identifying the frequent item sets about the cause of the fault

1) The code aggregate of the cause of fault was sorted and generated "Fault Model":

Package1: First of all, the sequence of the fault dimension table was created in the data warehouse, the corresponding ID number was found according to these faults number, and the ID numbers were sorted, an array Arr2 was created, it's size as same as the array Arr1.Then the output results of the Package1 were be converted into numeric, and it kept in the computer's memory as hexadecimal number.

2) A "Test Model" was created by the rules of the dimension table records, and with the "Fault Model " match, then an ideal frequent item sets and candidate frequent item sets were generated. The contents of the first record were read in Arr1 which the qualification was not empty in the rules dimension table, executing Package1, then the results were saved in another variable "Test Model".

3) One would be carried out with "Fault Model" and "Test Model" computing as the rules of data mining were given in previous, the frequent item sets 1 and frequent item sets 2 were generated. At last, traversing each records in the rules dimension table, repeat it, the frequent item sets 1 and frequent item sets 2 were generated. If the frequent item sets 1 is empty while it replaced by the contents of frequent item sets 2, while empty frequent item sets 2.

D. Filter candidate item sets and decide the fault type

Matching fault mode combine with the fuzzy inference rules to filter the dimension.

1) When the frequent item sets 2 is empty, the more of the special rules and the fault number are priority in rules of the frequent item sets 1,the aggregate of conclusion's number could be got immediate in this fault diagnosis by the frequent item sets 1.The output was a single conclusion if there was only one element in the frequent item sets 2, the fault was a single fault; Otherwise, the output was more conclusions and the fault was blend faults, more of the fault of electrical power system were blend faults.

2) When the frequent item sets 2 is not empty, the first, all the rules were deleted if the number of qualification less than or equal the rules of the maximum number in frequent item sets 1;If frequent itemsets2 is not empty, the ID of rules which was the maximum number of rules for the fault was added in frequent itemsets1(the ID of rules were preserved and the others were removed if there are special rules), at the same time, frequent itemsets2 was deleted, but the rules were signed and separated for the original ideals and candidates frequent item sets, among them, the exceptional fault ID were recorded for the rules of the candidates frequent item sets (failed to match the fault ID), it is a reference for users.

3) If the frequent itemsets1 and frequent itemsets2 are empty, then goto the display program for diagnosis directly, it showed that there no rules match, the system can do nothing for the fault diagnosis, and it can be identified and estimated only by manual.

12. Conclusion:

In the control of electric power systems, especially in the wide area backup protection of electric power systems, the prerequisite of protection device's accurate, fast and reliable performance is its corresponding fault type and fault location can be discriminated quickly and defined exactly. Based on data mining theory, we are using mainly cluster analysis technology to seek after for the characters of electrical quantities' marked changes. Then, we carry out fast and exact identification of faulty components and faulty sections, and finally accomplish fault analysis. The most important characteristic of data mining theory is it's inter disciplinarility and universality. Data mining is largely connected with machine learning in which scientists develop algorithms and techniques to find and describe potential laws in data. Generally speaking, data mining adds useful techniques to many other fields such as information processing, pattern recognition and artificial intelligence etc. For fault classification to work properly, all inconsistent fault cases or disturbances had to be identified and eliminated before using the data mining techniques. Breaker operating times should also be noticed just to have consistent data. It was noted that all substations recorded an average breaker opening time between 3 to 5 cycles. It was therefore concluded that all circuit breakers were indeed in good working condition. To support machine fault diagnosis, a data mining technique based on the integration of neural network, case-based reasoning, and rule-based reasoning is incorporated. This data mining technique can operate within a system to provide efficient on-line machine fault diagnosis over the World Wide Web. Here it has been studied the application with the data mining in power system state monitoring and fault diagnosis, presents a new type of data mining based on the fault mode analysis and the fast diagnostic reasoning algorithm, it has obvious advantages in dealing with a large number of power system data. One can effectively decide the operating state of power system and the improve the accuracy of the fault mode analysis After the system was implemented; The data was analyzed by a logical of the relevance degree, one can improve the quality of service of electric power enterprises and shortened the service time; at the same time, it could provide a great deal of information for aid decision making for planning and designing new electric power for enterprises.

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The Performance Optimization & Analysis of OFDM Communication System with various modulation schemes

Mr. Jigyasu Kumar Kaushal
Assistant Professor, Department of Computer Science, Sai Mahavidyalaya
(Sai College) BHILAI C.G.
Email profjigyasu@gmail.com

Dr Varsha Verma
Assistant Professor, Department of Hindi
Sai Mahavidyalaya
(Sai College) BHILAI C.G.
drvarshaverma@gmail.com

Mr.Sanjay Mourya
Assistant Professor, Department of Computer
Sai Mahavidyalaya
(Sai College) BHILAI C.G
sanjay1989mourya@gmail.com

Abstract: *With the development of advance technologies in the field of wireless communication there is a need of large bandwidth, fast communication with zero noise reception. With the use of IEEE 802.11a standards, OFDM based system is capable of providing high data rates of 54 mbps that makes it useful for wider bandwidth and noise free speed communication in WLAN. Global warming is the today's common issue because of the widely used mobiles and transmission data rates are increasing day by day with the rapid increase of wireless communication therefore today's need is to provide a technique which provide high efficiency of data and reduced energy. The proposed system provides better trade-off for having reduced bit error rate and high SNR so that to have high efficiency of the system. In this proposed work the design a 802.11a WLAN for BPSK, QPSK, QAM modulation scheme with different coding rate 1/2 and 3/4 will be simulated for every modulation by changing the value of signal to noise ratio it is expected to find the point at which the bit error rate is zero. By plotting the graphs for each modulation scheme between bit error rate on y axis and signal to noise ratio at x axis, it would be evaluated that which system is superior.*

Keywords: *GSM, PDC (personal digital cellular), LAN , WAN , WPAN.OFDM,.BER,.SNR.*

I. INTRODUCTION:

Today, the fast growing wireless local area networks has opened up a new market for wireless solutions. The IEEE 802.11a is a standard released in 1992, for high-speed wireless data transfer. In the types of communications services provided to users and the infrastructure needed to support those services, the past decade has shown major changes. The solution to the requirements of mobility with connectivity is provided by wireless communications. Thus, there has been tremendous growth in the field of wireless communications along with the growth of the Internet. This is due to other inherent benefits of wireless, such as decrease in wiring complexity, increase in flexibility, and ease of installation. WLANs or mobile technologies based on 2G/2.5G standards are the main reason behind the growth of wireless. Voice services and some data services are provided by these technologies at low data rates. It then extended to 3G systems that provide higher data rates with a throughput of 2 Mbps maximum. WPANs are complementary to WLANs, which provide networking of wireless data within a short range of 10m at data rates of about 1 Mbps. A new forum of access technology is provided by WLANs, in the LAN world. Several practical requirements are fulfilled by the new access technology.

1. Wireless Technology

In our everyday business and personal lives wireless technologies have become increasingly popular. Calendars, e-mail, address and phone number lists and the Internet are all features given by Personal digital assistants (PDA). Global positioning systems (GPS) are offered by some technologies that can pinpoint the location of the device anywhere in the world. More features and functions are promised by wireless technologies in the next few years. Radio frequency transmissions are used as the means for transmitting and receiving data over the air in case of wireless technologies, whereas cables are used in wired technologies. The range of wireless technologies grows from complex systems, such as wireless local area networks(wlan)and cell phones to the devices that do not process or store information such as wireless headphones, microphones, infrared devices are also included by them, which require a direct line of sight between the transmitter and the receiver to close the link .for eg. Remote controls, cordless computer keyboards and mice, etc. Wireless communications offer many benefits for the organizations and users such as lower installation costs, increased productivity, and portability and flexibility. A broad range of differing capabilities are covered by wireless technologies toward different uses and needs.

2. Wireless Standards

IEEE 802.11 standard is decided for WLANs, whereas the IEEE is first developed in 1997. To address mobile and portable stations and to support medium and higher data rate applications the IEEE designed 802.11. For 1 Mbps to 2 Mbps wireless transmissions the original WLAN standard 802.11 is designed. Further it followed by 802.11a in 1999, in which a high-speed WLAN standard for the 5 GHz band is established and 54 Mbps data rate is supported. The 802.11b standard which operates in the 2.4 - 2.48 GHz band has also been completed in 1999 and it supports 11 Mbps data rate. The dominant standard for WLANs is the 802.11b standard which is currently used, it provide sufficient speed for most of today's applications. The security weaknesses in the standard have been exposed because of the 802.11b standard which has been so widely adopted now days. Then next new standard is 802.11g which operates in 2.4 GHz waveband. Most of the current WLAN products are based on the 802.11b standard operate.

3. WIRELESS NETWORK

Wireless technology has been the most sought after in the recent years mainly due to the most obvious advantage of its mobility. Wireless network offers a user to connect to the existing network and move freely within the coverage area. Wireless network can also make network deployment easily and rapidly. It does not involve running cables for each user. There are two types of wireless network - infrastructure network and ad hoc (infrastructure less) network. In the infrastructure network, each node communicates with the base stations providing internodes routing and fixed network connectivity. So for each node in the network, there should be at least one base station in its range of transmission. Due to Base stations one or more transmission channel for mobile nodes located within its coverage area is being coordinated. In an ad hoc network, every node communicates with other nodes directly or indirectly through intermediate nodes that relay its packets because of transmission power limit. Thus, all nodes are virtual routers participating in computing and maintaining the routes. The main advantages of ad hoc network are convenience and low cost as no base station or fixed network infrastructure is required. An ad hoc network is very useful for places where pre-deployment of infrastructure is difficult or even impossible and one scenario often mentioned is in a meeting room without access point deployed, the notebooks equipped with 802.11. Wireless LAN card can form a temporary ad hoc network to share the files. An ad hoc network is capable of operating autonomously and is completely self organizing and self-configuring. Therefore, it can be rapidly and easily deployed. Another important property of an ad hoc network is multi-hop capability.

4. OSI MODEL

The International Standards Organization (ISO) defined as Open Systems Interconnection (OSI). is a model that provides architecture to transfer a message from one user to another user. It consists of seven layers they are as follow:

1) Application: Provides different protocol for different services to the applications
2) Presentation: Converts the data to information for translation, compression
3) Session: It manages user session such as creating & closing session between end-user processes
4) Transport: It provides connection/connectionless protocol for transporting a packet between two user
5) Network: Routes the data in the network
6) Data Link: Provides error control between adjacent models.
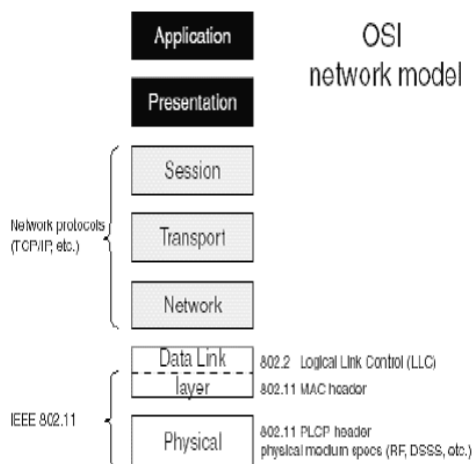7) Physical: It transmits the raw bits to transmission media

Figure 1: OSI model

The IEEE 802.11a standard focuses on the bottom two layers of the OSI model: data link layer and physical layer.

5. Orthogonal Frequency Division Multiplexing

The promising technique to achieve high data rate and combating multipath fading is Orthogonal frequency division multiplexing (OFDM), in wireless communications. OFDM can also be known as a hybrid of multi-carrier

modulation (MCM). The principle of transmitting data is MCM which is obtained by dividing parallel bit streams into several stream and each of these data streams are modulating into individual carriers or sub carriers (SCs). FSK modulation is a technique whereby from a set of orthogonal carriers data is transmitted on one carrier for each symbol duration. Orthogonality is achieved by separating the carrier by an integer multiples of the inverse of symbol duration of the parallel bit streams amongst various carriers. All the orthogonal carriers are transmitted with OFDM, simultaneously. In other words, the aggregated sum of the narrow orthogonal sub bands occupies the entire allocated channel. The symbol duration is increased proportionately by transmitting several symbols in parallel, through which the effects of ISI (Inter Symbol Interference) reduces. One of the applications of a parallel-data-transmission scheme is OFDM, through which the influence of multipath fading is reduces and makes complex equalizers unnecessary.
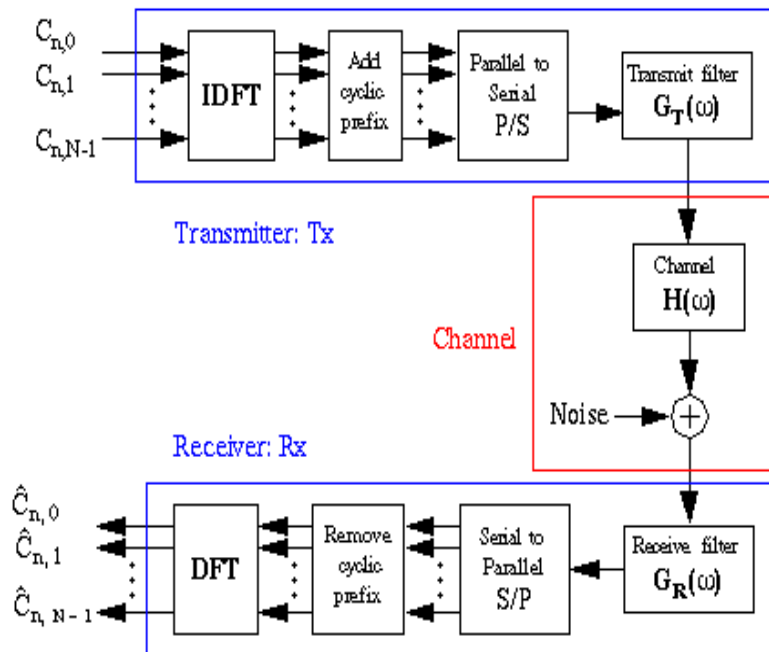

Fig.2 Block Diagram of OFDM Transmitter and Receiver

The total signal frequency band is divided into N non overlapping frequency in a classical parallel-data system. The modulation of each symbol is separated with a separate symbol, and then the N sub channels are frequency multiplexed. To avoid spectral overlap of channels and to eliminate inter channel interference it seems good. However, this leads to inefficient use of the available spectrum. The ideas proposed in the mid-1960s, to cope up with the inefficiency and to use parallel data and FDM with overlapping sub channels where each carrying a signaling rate, to avoid the use of high-speed equalization it is spaced apart in frequency, multipath distortion and impulsive noise is combated, as well as to use the available bandwidth fully . In order to create the OFDM symbol a serial to parallel block is used to convert N serial data symbols into N parallel data symbols. Then each parallel data symbol is modulated with a different orthogonal frequency subcarriers, and added to an OFDM symbol. The Today's demand is to provide the system with more data rate and good spectral efficiency. The modulation schemes which was used before has got less output efficiency. I proposed higher order M-QAM (QAM-256) modulation scheme to get more data rate and good spectral efficiency with reduced power requirement.

II. OFDM PARAMETERS:
The main parameters of the OFDM standard are listed in Table.1. Guard interval (GI) of 800 ns is a key parameter through which the choice of the other parameters is largely determined. Robustness to RMS delay spreads is provided by this GI of up to several hundred nanoseconds, depending on the modulation technique and coding rate used. Practically, this means that in any indoor environment this modulation is robust enough to be used, including large factory buildings. Although to reduce the delay spread to an acceptable amount and increase the range to an acceptable amount directional antennas may be used. It can also be used in outdoor environments. The symbol duration is chosen as 4 μs to limit the amount of power and time spent on the guard time to 1 dB. The SC spacing at 312.5 kHz is also determined, which is defined as the inverse of the symbol duration minus the guard time. Un coded data rates of 12 to 72 Mbps can be achieved by using 48 data SCs, by using variable modulation types from binary phase shift keying (BPSK) to 256-QAM. Each OFDM symbol contains an additional four pilot SCs in addition to the 48 data SCs, which can be used to track the residual carrier frequency offset during the training phase of the packet that remains after an initial frequency correction. Forward error correction (FEC) across the SCs is used to correct for SCs in deep fades, giving coded data rates are from 6 to 54 Mbps.

Table .I: Main Parameters of the OFDM Standard

Sr. No.	Information Data Rate	6,9,12,18,24,36,48 and 54 Mbits/sec
1.	Modulation	BPSK,QPSK,QAM
2.	Error Correcting Code	K = 7(64 states)
		Convolution
3.	Coding Rate	1/2, 2/3, 3/4
4.	Number of Sub carriers	52
5.	OFDM symbol duration	4 microsec
6.	Guard Interval	0.8 microsec
7.	Occupied Bandwidth	16.6 MH
8.	SC spacing	312.5 kHz

    MATLAB R2010a and SIMULINK tool is used to perform this simulation, using 1/2, 2/3and 3/4 code rate as per the table provided the simulation model is designed for AWGN channel with modulation technique such as QAM.

    IEEE based OFDM system provides the WLAN with various data load communication capabilities that are 6, 9, 12, 18,24,36,48 and 52 Mbps. The Figure 4.2 depicts the architecture of 802.11a system with 52 subcarriers which includes 4 pilot carriers, these subcarriers are modulated using BPSK,QPSK,16-QAM,64-QAM,256-QAM with the different code rates (1/2,2/3,3/4 coding) of forward error correction coding(Convolutional coding) are used. In the transmitter section the input data which is binary (data) is encoded by the standard rate 1/2, and code with generator polynomials (133,171) [30].The overall trellis structure are (7, [171,133]) in which operation mode is continuous. The coded output bits is punctured to have increased rate of 2/3 ,3/4.After the process of interleaving, bits are mapped into complex numbers according to the various modulation schemes. The coherent reception is done with 4 pilot values which are added to each of the 48 data values, so that to reach 52 modulation values, these values are then modulated onto 52 subcarriers with the application of IFFT. To make the system robust against multipath propagation the guard interval (cyclic prefix) is added. The other part is windowing which is applied to have a narrower output spectrum.

    The modulated and windowed digital output signals are converted to analog signals, which are then up converted to the proper channel in the 5 GHz band, then amplified and transmitted through an antenna. A typical OFDM receiver basically performs the reverse operations of the transmitter, together with additional training tasks. First, the receiver has to estimate frequency offset and symbol timing, using special training symbols in the preamble. Then, it can do a Fast Fourier Transform (FFT) for every OFDM symbol to recover 52 modulation values of all subcarriers. The training symbols and pilot subcarriers are used to correct for the channel response as well as any remaining phase drift. After taking FFT, a Viterbi decoder can be used to decode the information sequence with a trace back path of 34. A low complexity soft decision Viterbi decoder for a bit-interleaved system can be easily implemented. As shown in Figure 4.1.1 preamble is composed of 10 repetitions of a 'short training sequence and two repetitions of a 'long training sequence'. At the receiver end, short training sequences are used for Automatic Gain Control (AGC) convergence, diversity selection, timing acquisition, and coarse frequency acquisition in the receiver. Long training sequences are used for channel estimation and frequency acquisition. The output, grouped in frames, consists of two parts, preamble and data. The first data symbol, also referred to as the signal field, contains parameters such as the data rate of the frame; the initial state used in the scrambler and the length of the frame in number of data symbols. The frame can have from 1 to 4096 data symbols. The preamble is always the same and has two parts, short and long training symbols. The short symbols have a short period and repeat every 16-sub carrier while the long ones repeat every 64. The short training symbols (t1 to t10) are used to give a rough estimate of the time and frequency conditions while the long (T1 to T2) provide fine tuning. The preamble imposes limits on how much the time and frequency offsets may change.
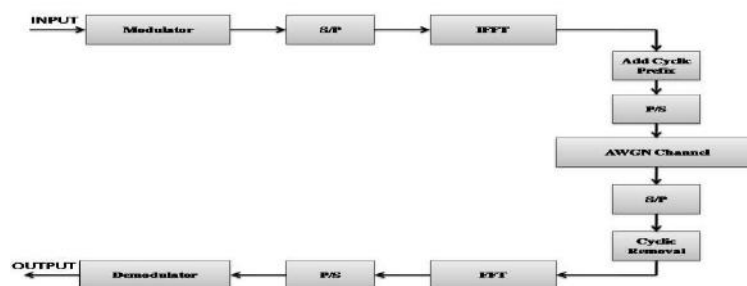
    Basic Block diagram of OFDM system is shown in Figure 4.3.1 .The architectural steps of the OFDM consists of steps of algorithm in transmission and reception side for data.

Steps of the algorithm in the Transmitter side are as follows-
Step-1 Input the Data

Step-2 Modulate the data.

Step-3 Convert the serial data into parallel data.

Step-4 Convert the parallel data in to time domain waveform using inverse Fourier transforms (IFFT).

Step-5 Combined all these parallel waveform to create the single time domain waveform for transmission. Transmit this signal over AWGN channel.

Steps of the algorithm in the Receivers side are as follows-

Step-1 Get the OFDM signal.

Step-2 Convert these parallel data into frequency domain with the help of FFT.

Step-3 Convert the parallel data into serial data to get the original signal.Step-4 Demodulate these signal to get the baseband signal converts these data in to serial form to get back the original signal.

4.4 SIMULATION FLOW CHART

The simulation flow chart of the given ofdm system consists of input data which is pass through different modulation schemes (BPSK, QPSK, QAM) after that the implementation of IFFT is done to convert data in time domain which is transmit over AWGN channel at receiver side the is converted to frequency domain by FFF then by demodulating the signal data error rate calculation is done in terms of bit error rate.
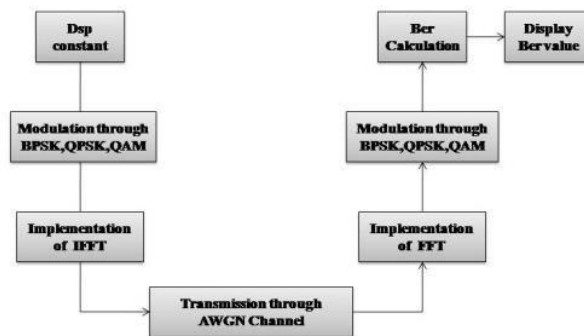

Figure 4.4.1: OFDM Simulation Flow Chart

III. STEPS OF SIMULATION

Different modulation schemes for the various parameters set for the simulation are shown in figure. The Puncture vector was changed and the number of bits per frame was altered according to the code rate.
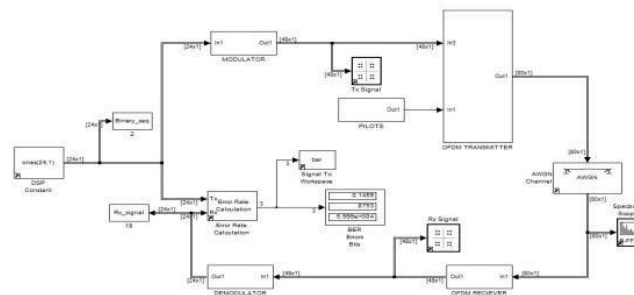

Figure3: Simulink model for awgn channel

Modulator

It Consist of various essential block which are explained as follows:

1) Convolution Encoder

2) Puncture

3) Matrix Interleaver

4) General Block Interleaver

5) QAM-256

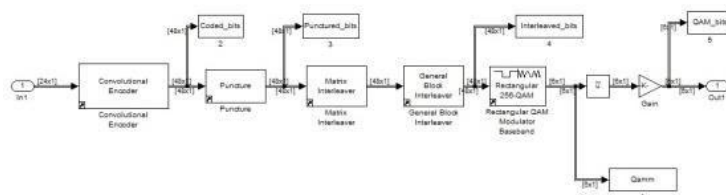**Figure4: Block Diagram of Modulator**

Principle of OFDM Transmission

Orthogonal Frequency Division Multiplexing (OFDM) is a multiplexing technique that divides a channel with a higher relative data rate into several orthogonal sub-channels with a lower data rate. For high data rate transmissions, the symbol duration Ts is short. Therefore ISI due to multipath propagation distorts the received signal, if the symbol duration Ts is smaller as the maximum delay of the channel. To mitigate this effect a narrowband channel is needed, but for high data rates a broadband channel is needed. To overcome this problem the total bandwidth can be split into several parallel narrowband subcarriers. Thus a block of N serial data symbols with duration Ts is converted into a block of N parallel data symbols, each with duration T = N×Ts. The aim is that the new symbol duration of each subcarrier is larger than the maximum delay of the channel, T > Tmax. With many low data rate subcarriers at the same time, a higher data rate is achieved. In order to create the OFDM symbol a serial to parallel block is used to convert N serial data symbols into N parallel data symbols. Then each parallel data symbol is modulated with a different orthogonal frequency subcarriers, and added to an OFDM symbol,
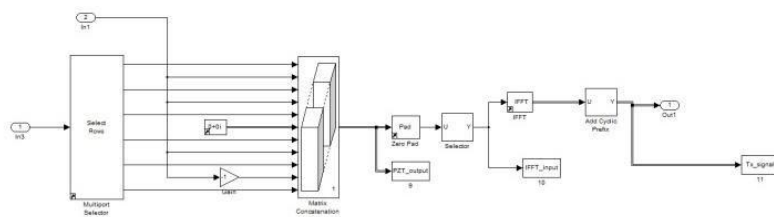

Figure 5: Block diagram of OFDM
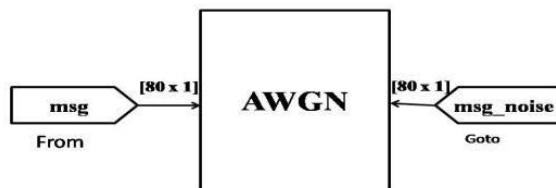
Noise Medium AWGN

Figure 6: Block diagram awgn channel

White Gaussian noise is added to the AWGN Channel block to a real or complex input signal. When the input signal is real this block add real Gaussian noise and produces a real output signal. This block adds real Gaussian noise when the input signal is complex and produces a complex output signal. Its sample time is inherited by this block from the input signal.
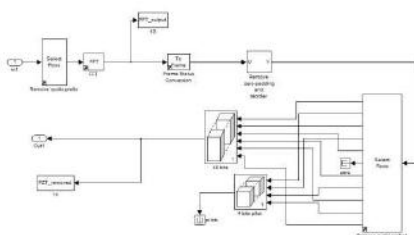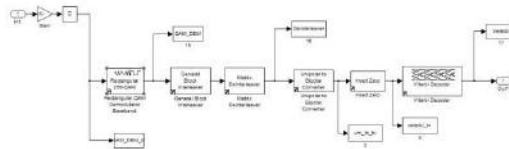

Figure 7: Block diagram Ofdm receiver

Figure 8: Block diagram demodulation

The demodulator subsystem performs the inverse tasks of the modulator subsystem.

3. ERROR CALCULATION

It contains two input & one output out of which two input are actually transmitted and actually received respectively out. The error rate calculation block calculates the bit error rate, by comparing the received data with transmitted data. It has three inputs, Tx and Rx port that are used to accept transmitted and received signals and the third port is used to indicate the related frame for computation. This simulation is done with Matlab and Simulink as the tool. The simulation model is designed for AWGN channel with modulation technique such as qam256 using ½,2/3and 3/4 code rate. Table 4.2 gives the main OFDM parameters in 802.11a standard, which we used in for this simulation. The qam256scheme is simulated for 2/3,3/4 code rate instead of ½ code rate.

IV. RESULT AND DISCUSSION:

The objective behind simulating the physical layer in MATLAB is to study BER performance under BPSK, QPSK, QAM-16, QAM-64, QAM-256 modulation techniques by using AWGN channel conditions. But, in order to relay on any results from PHY layer simulation we must have some consideration that can do some validation in terms of general trends. In all aspects of code rate technique, the performances of BPSK, QPSK, QAM-16, QAM-64, QAM-256 modulation technique are as follows,
1) The higher order modulation scheme such as QAM-256 has strong SNR and the lower order modulation scheme such as BPSK has poor SNR.
2) BPSK has the lowest BER and QAM-256 has the highest BER than other modulation techniques. In BER plots by using the higher modulation coding techniques such as QAM-256 has provided better performance with highest SNR but as range increases, the lower modulation coding techniques such as BPSK can be adjusted to perform better with lowest SNR.
3) In terms spectral efficiency it can be conclude that QAM-256 modulation coding technique can be used for transmitting maximum amount of data with the less transmission error.
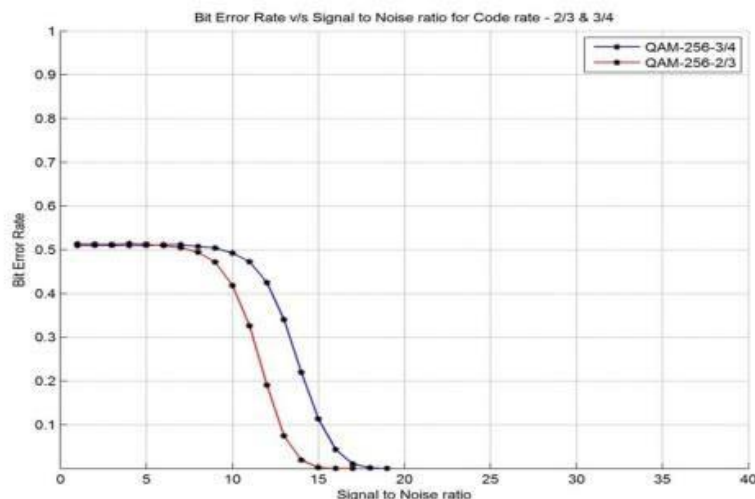
The simulation parameter is used as shown in Table 5.2.1 and hence the resultant output is taken in terms of BER Vs SNR Plot. It is found that the performance of QAM-256 modulation scheme is better by using AWGN Channel for 2/3 and 3/4 code rate as shown in Figure5.3.1.The performance comparison of OFDM based IEEE 802.11a WLAN under AWGN fading channel condition with QAM-256 code rates of 2/3 and 3/4 is given in the Figure5.1.However from the figure it is clearly shown that QAM-256 with code rate of 3/4 is superior as compared to QAM-256 2/3 ,if the system performance of high data rate and spectral efficiency is taken into account. For the 2/3 code rate in QAM-256 performance is comparably lower from QAM-256 with code rate 3/4 in terms of high data rate and spectral efficiency.

Bit Error Rate v/s Signal to Noise ratio for Code rate - 1/2
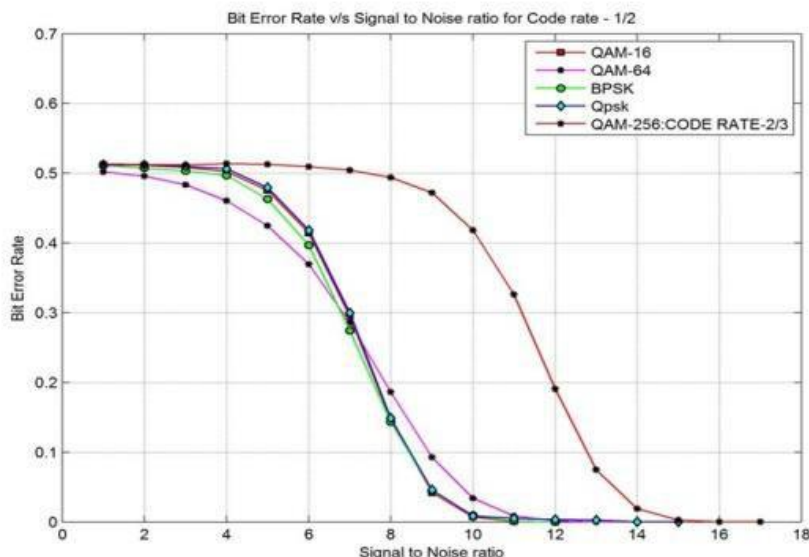
The Figure 5.3.2 shows the performance of the OFDM based IEEE 802.11a WLAN under AWGN Channel condition with modulation schemes BPSK, QPSK, QAM-16 with the code rate of 1/2 and QAM-64, QAM-256 with code rate of 2/3 .The encoding is performed using the convolutional encoder as recommended by the 802.11a standard with a coding rate of 1/2 and 2/3 at the receiver section the convolutionally encoded data were decoded using viterbi decoder, AWGN Channel i.e. Additive white noise channel model adds noise to the transmitted signal, whose power spectral density is constant throughout the bandwidth of the transmitted signal. The AWGN channel model does not take into account various interference effects, noise of higher distortion delay and Doppler Spread, etc. When 802.11a system was stimulated for BPSK modulation scheme with AWGN Channel model, it is found that the system employing BPSK performed better when transmission done under noisy channel with low data rate. While if transmission is done for high data rate QAM-256 modulation is performing better with code rate 2/3 as shown in Figure 5.3.2.

Bit Error Rate v/s Signal to Noise ratio for Code rate - 3/4
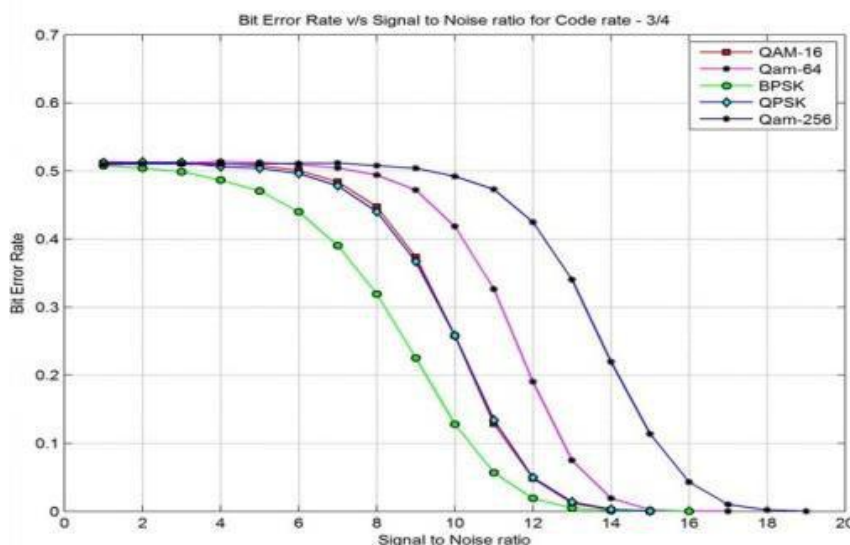
The Figure 5.3.3 shows the performance of BPSK, QPSK, QAM-16,QAM-64 and qam-256 modulation scheme. The simulation shows that BPSK has the lowest BER and QAM-256 has the highest BER than other modulation techniques. As the present age requirement of high data rate and spectral efficiency as if 802.11a WLAN standard is considered. This can be achieved by increasing the SNR and having low bit error rate. The Figure 5.3.3 provides the better trade off for having reduced bit error rate and high SNR so that to have high efficiency of the system. In this system model we design an 802.11a WLAN for BPSK, QPSK, QAM-16, QAM-64, QAM-256 modulation scheme with coding rate 3/4. For every modulation by changing the value of signal to noise ratio we have obtained the point at which the bit error rate is zero. By plotting the graphs for each modulation scheme between bit error rate on y axis & signal to noise ratio at x axis, it can be concluded by comparing response in Figure5.3 that the QAM-256 modulation at 3/4 coding rate is superior to BPSK, QPSK, and QAM-16 and QAM-64 modulation scheme.

MODULATION	BPSK	QPSK	QAM-16	QAM-64	QAM-256
BITS/SYMBOL	1	2	4	6	8
CODE RATE	3/4	3/4	3/4	3/4	3/4
BER at SNR(0-5)db	0.4937	0.4174	0.5103	0.5131	0.5099
BER at SNR(5-10)db	0.2752	0.4951	0.3611	0.3961	0.4070
BER at SNR(10-15)db	0.0205	0.0503	0.0478	0.1528	0.3645

Table 5.3.1: Performance evaluation using BPSK, QPSK, QAM-16, QAM-64 and QAM-256 modulation techniques under AWGN channel at various SNR levels with code rate 3/4.

In digital Communication system BER is an important figure of merit which is used to quantify the integrity of data transmitted through the system. The Table 5.3.1 shows the data of modulation schemes BPSK, QPSK, QAM-16, QAM-64 and QAM-256 in terms of BER variations for different SNR ranges under AWGN Channel, code rate of 3/4.It is observed from the Table 5.3.1 that to transmit more data bits QAM-256 modulation scheme should be preferred because of its high SNR range with low BER rate.

MODULATION	BPSK	QPSK	QAM-16	QAM-64	QAM-256
BITS/SYMBOL	1	2	4	6	8
CODE RATE	1/2	1/2	1/2	2/3	2/3
BER at SNR(1-4)db	0.5049	0.5103	0.5086	0.4857	0.5132
BER at SNR(4-8)db	0.3196	0.3368	0.3328	0.3168	0.5053
BER at SNR(10-15)db	0.0184	0.0158	0.0245	0.0768	0.3520

Table 5.3.2: Performance evaluation using BPSK, QPSK, QAM-16, QAM-64 and QAM-256 modulation techniques under AWGN channel at various SNR levels with code rate 1/2, 2/3.

The tabular evaluation is made as per response of the BER Vs SNR for BPSK, QPSK, QAM-16,QAM-64,QAM-256 modulation schemes with code rate of 1/2,2/3,3/4.The tabular data shows the increase of high SNR with low BER for the modulation schemes. From the comparative figures of data bits it is observed that in the noisy channel BPSK performance is better but at the expense of transmission data capacity i.e., one bits per symbol .For having higher data rate QAM-256 with code rate 2/3 should be preferred as it gives good response against high SNR.

V. CONCLUSION:

The design of IEEE 802.11a Wlan of BPSK, QPSK, QAM-16, QAM-64 and QAM-256 has been investigated in this proposed work under AWGN channel with code rate of 1/2 and 3/4 .The effect of ISI is reduced by using guard interval and hence the performance has been improved. It is concluded that QAM-256 modulation scheme with 3/4 code rate is superior as compared to BPSK, QPSK, QAM-16 and QAM-64 modulation schemes. The rapid rise in BER is due to the fact, delay spread matches with the time of cyclic extension of the guard period. It also concludes that obtained experimental comparison result of QAM-256 with code rate of 2/3 and 3/4, the QAM-256 with code rate of 3/4 performances is better and its BER reaches towards zero when SNR approaches to higher values. Hence from the overall performances, for the system having higher rates could be achieve by QAM-256 modulation scheme with code rate of 3/4.

VI. FUTURE SCOPE:

In this project the different fading channels such as Rician and Rayleigh channel has been not taken into account which can be taken in to account for future scope for the given modulation schemes. The IEEE 802.11a standard is considered in the proposed work the comparison of performance among different 802.11x standards may be investigated as a future work `with various topologies than existing techniques. The enhancement for energy efficient and higher bandwidth can be done with the implementation with Fuzzy, Neuro-Fuzzy and PSO system.

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SURVEY REPORT ON EVALUATION OF EMPLOYEE PERFORMANCE AND APPRAISAL CALCULATION USING DATA MINING TECHNIQUES

Mrs.Pranali Ravikant Hatwar
Assistant professor (cs)
Kalyan college , Bhilai

pranalirhatwar@gmail.com

Miss Janhavi Patel
Assistant professor(cs)
Kalyan college, Bhilai

janhavipatel5555@gmail.com

Miss Geeteshwari Verma
Assistant professor(cs)
Kalyan college, Bhilai

geetuv1@gmail.com

Abstract: *Employee is an important part of the organization they play an important role in fulfilling the goal of the organization. The performance of the employee is very important for the growth of the organization. The rewards that each employee received will be listed in the database. employee performance reporting provides a simple visual way to compare performance individually and across the entire company. Data mining plays an important role in the field of predictive analytics.A common and rather simple method to create a predictive model is decision tree.*
This paper discuss about a brief literature survey on several paper published to predict employee performance using data mining techniques

Keywords: *data mining, data mining techniques, decision tree, comprehensive review.*

INTRODUCTION:

After hiring employees, management become concerned about the performance of their employees and for that they build evaluation system. All the employees from every organization always fill their appraisal.

The feature that can be included in the employee performance evaluation and appraisal calculation using data mining application are as follows

1) **Employee database management:-**The database of the employees will be organized in an orderly manner
2) **Sorting based on performance**:-Using this project the employees can easily be sorted based on the performance
3) **Performance based reward**:-The employee of the organization can be rewarded based on the performance that one performs in the organization

DATA MINING:

Data mining is the computer assisted process of extracting knowledge from large amount of data.

Data mining tools predict customer habits, predict pattern and future trends, allowing business to increase company revenues and make proactive decisions.

IMPLEMENTATION PROCESS
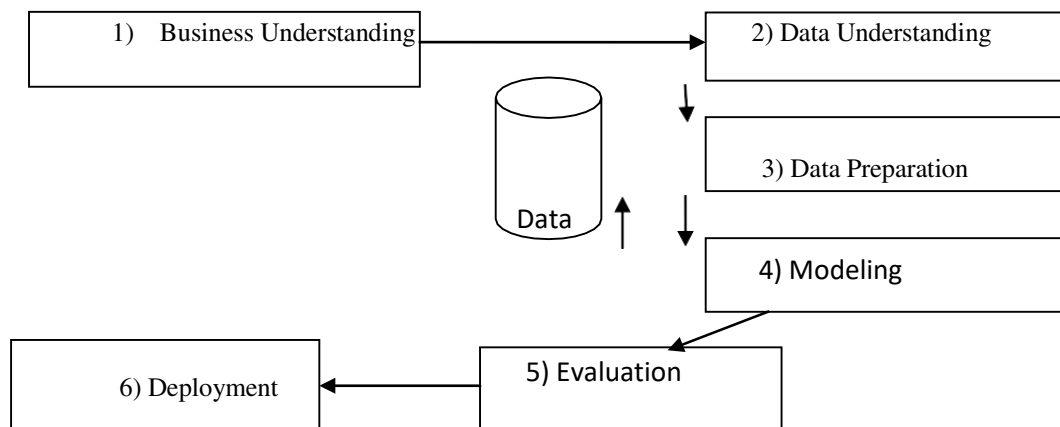
Large amount of data and databases can come from various data sources and may be stored in different data warehouses and data mining techniques such as machine learning, artificial intelligence and predictive modeling can be involved

There are six implementation processes in data mining they are as follows:

- Business understanding which is used to establish business and data mining goals
- Data understanding data can be checked to find whether it is appropriate for data mining goals
- Data preparation Data can be proposed well by sequential process such as selecting, cleaning, transforming, formatting, anonymizing and Constructing
- Modeling Modeling mathematical models are used to pattern the data
- Evaluation Data can be evaluated
- Deployment After evaluating data are stored

DATA MINING TECHNIQUES:

Classification:

The information about data and metadata has been analyzed to retrieve relevant information. The main part of classification method is to classify the data in to different classes.

Clustering:
This method is used to find similarities and differences among the given data.

Regression:
This method is used to identify and analyze relationship between variables and also used to find the similarities on variables.

Association Rule:
The hidden part in data set and their associated data can be found by using this method.

Prediction:
By using past events or instances the future event will be predicted. The prediction can be done easily by combining all other data mining methods.

EMPLOYEE RELATED VARIABLES:

Some research article stated

Chen and Chen (2006) used several attributes to predict the employees performance. They specified age, gender marital status, experience, education, major subject and school tires
Employee performance is highly affected by education degree, the school tire and job experience

Kahya (2007) searched on certain factors that affect the job performance. The researcher reviewed previous studies, describing the effect of experience, salary, education, working condition and job satisfaction on the performance. The position or grade of the employee in the company was of high positive effect on his/her performance.

Sallech et al(2011) Stated that environment affect the employee performance because it makes the good relationships between their colleagues.

VARIABLES:
A .Quality:-It refers to the quality working of an employee. This quality type information is used for prediction purpose
B. Attendance:-The extent to which an employee is punctual
C. Initiative/Creativity:-Means finds new and better ways of doing things
D. Overall Performance:-Rate employee's overall performance in comparison to position duties and responsibilities

DECISION TREE:
A Decision tree is a flowchart like tree structure. Where each internal node denotes a test on an attribute, each branch represents an outcome of the test and each leaf node holds a class label. The topmost node in a tree is the root node

Decision trees are powerful and popular tools for classification and prediction. Decision trees represent rules, which can be understood by humans and used in knowledge system such as database. Decision tree learning is a method

Commonly used in data mining. The goal is to create a model that predicts the value of a target variable based on several input variables. The goal is to create a model that predicts the value of a target variable based on several input variables

Building the Decision tree needs to find which attribute would be the root node of the tree

ATTRIBUTE SELECTION MEASURES:

ENTROPY :- Entropy in decision tree stands for homogeneity .If the data is completely homogeneous the entropy is o else if the data is divides(50-50%)entropy is 1

$$E(S)=\sum^{c} -p_i \log_2 p_i$$

$$i=1$$

INFORMATION GAIN :- Information gain is the decrease/increase in entropy value when the node is split. An attribute should have the highest information gain to be selected for splitting

Expected information needed to classify a tuple in D

$$I(p\ n)=-p/s \log_2 p/s -n/s \log_2 n/s$$

DATASET DESCRIPTION

To select the best attribute measure to construct decision tree.We choose 10 employees doing the same job

We calculate entropy and information gain using following attribute

TABLE

Quality	Attendance	Initiative	Overall Performance
Serious	Full	Perfect	V.Good
Common	Full	Perfect	V.Good
Serious	Full	Ordinary	V.Good
Serious	Full	Ordinary	V.Good
Serious	Full	Ordinary	Good
Serious	Medium	Perfect	V.Good
Serious	Medium	Perfect	V.Good
Common	Medium	Perfect	Good
Serious	Medium	Perfect	Good
Common	Medium	Ordinary	Good

Entropy of a given database
$I(p,n)=-5/10*\log_2(5/10)-3/10*\log_2(3/10)-2/10*\log_2(2/10)$
   =0.8812 bits
Finding   splitting   attribute
$E(Quality)=7/10*I(5,2)+3/10*I($
2,1)
        =0.7810 bits

$E(Attendance)=5/10*I(4,1)+5/10*(3,2)$
        =0.8464   bits
$E(Initiative)=6/10*I(5,1)+4/20*I($
2,2)
        =0.87074 bits

Calculating   Information   Gain
Gain(Quality)=0.8812-0.7810=>0.1002   bits
Gain(Attendance)=0.8812-0.8464=>0.0348
bits   Gain(Initiative)=0.8812-
0.87074=>0.01046 bits

The maximum information gain is initiative, so we select initiative as root node.
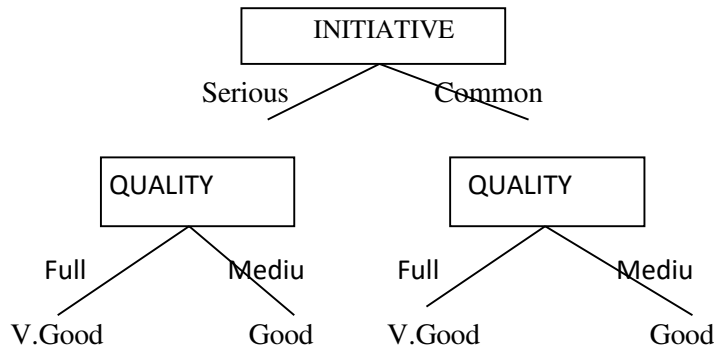
COMPREHENSIVE REVIEW OF LITERATURE:

On the basis of evaluating the following research paper

- "Employee performance and leave management using data mining technique" 2018, Himanshu ku.Singh. In this paper classification model is built for finding the performance of employee and for this classification algorithm methodology is used .In this paper Gini index is used rather than information gain.
- "Using data mining technique to build a classification model for predicting employee performance" 2012, quseem A.Aradaideh, In this paper decision tree is created by using ID3 algorithm. For calculating entropy and information gain ,use highest gain attribute as root node. In this paper analyzing new patterns and relationship for organization.
- "Survey on predicting performance of an employee using data mining techniques", 2019, S.E. viswapriya, In this paper clustering and classification technique is used. In this paper relationship between emotional intelligence and job performance has been determined by using data mining tool
- "Employee performance evaluation using machine learning algorithm" 23018, Rahul yedida Rakshilvatiahi abhilash, Rahul reddy. In this paper K-nearest neighbous algorithm, artificial network methodology is used and identified several methods of classification determined accurate results among different algorithms, k nearest neighbor gives accurate result.

SIMULATION AND RESULT:

1) Using this system performance we easily trace employee goal detail with every stages
2) This system is easy to access and user friendly
3) Easy to manage employee details and allot a goal to the registered
4) Employee can view their goals and task allotted to them at every stage.
5) After this employee data is added to the database by considering attribute Quality, attendance, initiative, overall performance etc.

Here we assigning a number between 1 to 10 to each attribute of an employee for calculating a performance of an employee by using a decision tree by considering the information provided by admin the probability of an employee performance is generated

CONCLUSION:

From these researches we can understand Gini Index measure is very easy to select the best attribute to construct decision tree because of its simplicity, elegance and robustness, The result indicates that selection of attribute using Gini index is very easy and simple compared to information gain.

This type of research provides a benefit to the organization supervisor to predict the employee's performance by considering some parameters. This also helps the supervisor to find and increase the employee performance and those employee needed special attention for reducing falling ratio for taking action at right time.

Decision tree method is used on a employee database in order to analyse an employee data to make an prediction.

Data mining is a tool allows us to manage data in superior way. By using this system performance and quality of an management system is improved.

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DATA SECURITY OF BIG DATA IN BIG PROMISES

Durgesh Kumar Kotangle
Asst. Prof. (Computer Science)
Govt. V.Y.T. Autonomous P.G. College , Durg (C.G.)

Abstract: *Big Data is identified with advances for gathering, preparing, analyzing and removing helpful information from extremely enormous volumes of organized and unstructured data produced by various sources at rapid. Big Data makes basic data security and protection issues, simultaneously Big Data investigation guarantees critical open doors for counteraction and discovery of cutting edge cyber-assaults utilizing connected interior and We should deliver a few difficulties to acknowledge genuine capability of Big Data for data security. The paper breaks down Big Data applications for data security issues, and characterizes look into bearings on Big Data investigation for security insight.*
Keyword : *Big Data, data security, examination, Hadoop, data perception.*

INTRODUCTION:

The most well known definition is given by portraying their three qualities called "3V": Volume (the data volumes are huge which can't be prepared by customary strategies), Velocity (the data is delivered with extraordinary speed and should be caught and handled quickly) and Variety (assortment of data types: organized, semi-organized, and unstructured).In view of data quality, IBM has included a fourth V called: Veracity. Be that as it may, Oracle has included a fifth V called: Value, featuring the additional estimation of Big Data [1]. Big Data is a moderately new term (it was just authored in 2008 [2]), yet it turned into an exceptionally well known buzz word after publication of the report arranged Presently well known media is loaded with productions on Big Data open doors for government, business, human services, law requirement, cyber security, innovative work, and so forth. Industry is abuzz with the guarantee of Big Data [3]. National governments have as of late reported Perusers may have a misinterpretation that big data can be utilized distinctly by enormous organizations. Data-driven data security tools. Data-driven data security goes back to abnormality based interruption location frameworks (IDSs).

The following stage is improvement of Security Information and Event Management (SIEM) frameworks. IDSs gather and break down system traffic and use transcendently signature way to deal with interruption recognition. Fundamental constraints of IDSs are restricted utilization of outer occasions and "level" occasion model.IDSs experience the ill effects of high estimations of bogus positives and bogus negatives. It ought to be noticed that the intermingling of Big Data and distributed computing advances [6] permits little and medium undertakings utilizing Big Data openings as well. While the guarantees of Big Data are genuine they are demonstrated by progress preliminaries of big organizations like Google, Yahoo, Facebook driving data science analysts are cautioning that there are numerous difficulties at each progression of Big Data examination pipeline [7, 8]. The connection of data security and Big Data is twofold. Data security and protection are among the most testing issues of Big Data. Simultaneously, Big Data investigation guarantees critical open doors for tackling diverse data security issues.

THE HADOOP ECOSYSTEM

Big Data structure for handling and investigation comprises of various programming devices. Right now the Hadoop programming biological system is considered as an equivalent word for Big Data. Hadoop actualizes MapReduce innovation of Google [11], which gives programmed data resembling and preparing on PC groups. A significant number of the Hadoop segments are open source programming created in different Apache ventures [12]. Underneath a concise depiction of certain parts of the Hadoop environment is given:

HDFS (Hadoop Distributed File System)

a dispersed document framework for capacity and the executives of date distribution centers from a couple of terabytes to petabytes; it is HDFS parts the info data into squares and distributes these blocks on servers in better places allotted to them. HDFS is flaw tolerant, and disappointment of any segment doesn't influence the general framework performance. MapRedice executes (in Java) Google's conveyed registering model for equal processing with enormous data, a few petabytes, in PC bunches. A MapReduce work comprises of two stages [11]: Map and Reduce.

Apache Pig - segment comprises of a compiler that produces a grouping of MapReduce projects, and language 'Pig Latin'. Offers help for performing SQL-like questions to conveyed databases to Hadoop.
Hive - a data stockroom framework, used to allude to huge data put in the Hadoop document framework through SQL.
HCatalog - gives stockpiling the board administration and data tables made in Hadoop. It underpins maintainable working of the Hadoop parts, for example, Pig, MapReduce, Streaming and Hive.
Hbase - (Hadoop DataBase) a circulated, columnar database (got from Google's BigTable).
Zookeeper - its primary capacity is to store the coordination data, naming, giving dispersed synchronization, and gathering administrations, which are significant for an assortment of circulated frameworks.

Mahout - programming for AI, including key calculations, for example, arrangement, grouping, and suggestion and collective sifting. Fundamental calculations are actualized with Map/Reduce worldview on the Hadoop upper level.

Parts like Sqoop and Flume remembered for the biological system are utilized to transmit data to the Hadoop-groups and the other way around. Hadoop is regularly utilized related to standard data stockpiling and preparing advances, it is now and again included creative arrangements, for example, Storm, Dremel, Drill, and so on. In addition, practically all significant makers of business insight apparatuses add usefulness to their items to break down data for all time put away in Hadoop-bunches.

BIG DATA SECURITY

Despite the fact that data security and is basic issues for Big Data, these issues have pulled in little consideration as of recently. A few specialists call attention to that because of big volumes Big Data is ugly for the assailants for the present [13].In any case, Big Data makes new dangers to data security, and belief system of assurance received for customary security measures, is never again satisfactory for Big Data. Cloud Security Alliance (CSA), a working gathering which contemplates Big Data security issues as of late arranged a record that rundowns the apparatuses to ensure Big Data frameworks [13]:6. Versatile and composable protection saving data mining and examination; CSA appropriated these devices into four gatherings: foundation security; data assurance; data the executives; responsive security.

1. Secure calculations in disseminated programming systems;
2. Security best practices for non-social data stores;
3. Secure data stockpiling and exchanges logs;
4. End-point input approval/sifting;
5. Constant security checking;
6. Versatile and composable protection saving data mining and examination;
7. Cryptographically implemented data centric security;
8. Granular access control;
9. Granular reviews;
10. Data provenance.

CSA appropriated these devices into four gatherings: foundation security; data assurance; data the executives; responsive security.

BIRD'S EYE VIEW OF CYBER THREAT LANDSCAPE AND SECURITY TOOLS

Progressed threats. Businesses and governments face a developing risk scene. Probably the best test is presented by cutting edge industrious dangers (APTs), which are advanced, long haul, multiphase, multifaceted assaults focusing on a specific association [14]. RSA, Google, NASA and some country states have encountered huge security breaches due to APTs. Moderating the danger of APTs requires propels past customary security defenses to incorporate real time risk the board.

Data sources. Organizations gather a wide assortment of data for security examination and examinations: traffic data, log documents (activity framework, application, firewall, web get to, and so forth.), log/occasion data from systems administration gadgets, DNS specific logs/occasions, client movement, physical security action data, firewall rule sets, resource data, and so forth. Regardless of this, inside data assortment and investigation is never again enough. Solid hazard the board and occurrence recognition/reaction rehearses are likewise being enhanced with developing volumes of outside security data.

Data-driven data security tools. Data-driven data security goes back to abnormality based interruption location frameworks (IDSs).

The following stage is improvement of Security Information and Event Management (SIEM) frameworks.

IDSs Intrusion Detection System gather and break down system traffic and use transcendently signature way to deal with interruption recognition. Fundamental constraints of IDSs are restricted utilization of outer occasions and "level" occasion model. IDSs experience the ill effects of high estimations of bogus positives and bogus negatives.

SIEM Security Information and Event Management frameworks gather, total, and channel alerts from numerous interruption discovery sensors and different sources and present noteworthy data to security investigators. The tree occasion model permits to connect more elevated level occasions (programmer interruptions, insider activities, Trojan assaults) in view of rules for basic occasions (activating of IDS and antivirus marks, firewall blunders, erroneous passwords). It ought to be noticed that issues of testing and assessment of IDSs found their appearance in many research papers [15]. There are a couple of papers on SIEM frameworks testing (SC Magazine assessments) and benchmarking [16].

BIG PROMISES FOR CYBER SECURITY:

These advances permits broadening conventional data security frameworks by encouraging the capacity, support, and investigation of security data. Examination of data from various sources in various organizations, the capacity to look at these data, abnormality location, and fighting cyber dangers progressively – all this has been made conceivable using innovations for preparing and analyzing Big Data.

Numerous organizations offering security arrangements distributed white papers, accentuating the favorable circumstances and chances of Big Data for security [17, 18, 19]. The CSA working gathering's report, "Big Data Analytics for Security Intelligence" centers around big data's job in security, and features conceivable research bearings [20].

RSA prescribes step by step move to the Intelligence-Driven Security model [19]. Contrasted and regular SIEM frameworks the benefit of the Intelligence-Driven Security model is the capacity to examine an a lot bigger degree than previously, the most various, not utilized All in all, profoundly versatile frameworks dependent on the standards of Intelligence-Driven Security, ought to have the accompanying properties:

- utilize propelled observing subsystem to screen an assorted cluster of sources and make cooperative energies by consolidating data from various sources;
- incorporate mechanized instruments for gathering and handling Big Data and planning brings about an institutionalized configuration, available to different subsystems;
- incorporate a focal archive, amazing diagnostic apparatuses and effective representation devices empowering to get helpful information from crude data.

THE BIG DATA CHALLENGES FOR CYBER SECURITY:

Despite the fact that the utilization of Big Data investigation to cyber security issues has noteworthy guarantee, we should deliver a few difficulties to understand its actual potential.

1) The Big data investigation makes security infringement simpler. The ramifications of security presentation to end-clients are not yet completely comprehended. We should create security safeguarding Big Data applications.

2) APT recognition by Big Data analytics. There is requirement for new location calculations, fit for handling huge measures of data from various data sources. Right now, few proof of idea arrangements that utilize Big Data investigation for security occasion location exist, and show promising outcomes [21, 22, 23]. 3)

3) High execution cryptography encryption and decoding calculations; encoded data search, trait based encryption, assaults on the accessibility, unwavering quality, and trustworthiness of Big Data [24].

4) Big DDespite the fact that data security and is basic issues for Big Data, these issues have pulled in little consideration as of recently. A few specialists call attention to that because of big volumes Big Data is ugly for the assailants for the present [13].In any case,

5) Big Data makes new dangers to data security, and belief system of assurance received for customary security measures, is never again satisfactory for Big Data. Cloud Security Alliance (CSA), a working gathering which contemplates Big Data security issues as of late arranged a record that rundowns the apparatuses to ensure Big Data frameworks [13] Versatile and composable protection saving data mining and examination; CSA appropriated these devices into four gatherings: foundation security; data assurance; data the executives; responsive security. Since Big Data lets us extend the data sources we use for handling, it's difficult to be sure that every datum source meets the dependability that our investigation calculations require to create precise outcomes. In this manner, we have to reexamine the validness and respectability of data utilized in our devices. We can investigate thoughts from adversarial AI and powerful insights to recognize and relieve the impacts of malevolently embedded data [25, 26].

6) Representation use human's uncommon capacity to distinguish designs in pictures. Perception innovation is a rising territory today however there is an expanding measure of innovative work [27, 28].

There are open-source and business data perception instruments for security [29], but data representation for security remains amazingly basic, ruled by pie diagrams, charts, and Excel spreadsheet rotate tables.

7) Appropriately talented work force are a basic component for fruitful usage of Big Data for data security. One of the difficulties in such manner is the overall deficiency of such staff. Explicit abilities incorporate data the board aptitude, data investigation skill, and risk examination mastery. These aptitudes are probably not going to be found in any one individual, and this implies synergistic groups of experts should be shaped to permit associations to accomplish ideal

CONCLUSION:

Big Data has as of late risen as a profoundly encouraging worldview for examination of the enormous volumes of heterogeneous data. Big Data innovation is changing data security danger scene and just as security arrangements. Be that as it may, in spite of the noteworthy open doors offered by Big Data for data security, numerous difficulties depicted in this paper must be tended to Many key difficulties in this space, including location of cutting edge industrious assaults, identification of data spillage, consolidation of legal, extortion and criminal knowledge, and security representation are just Accordingly, we believe there is as yet gigantic open door for analysts to make noteworthy

commitments in this field, and get huge effect to their improvement the business. In this paper, we overview the best in class of Big Data explore for data security, covering its fundamental ideas, unmistakable attributes, key advances just as research headings. As the improvement of Big Data innovation is still at a beginning period, we trust our work will give a superior comprehension of the examination difficulties of Big Data,

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A Recent Trend : Application of Interactive Data Mining in Bioinformatics

Salma Mohd. Shafi

Head, Computer Science Dept.

Bhilai Mahila Mahavidyalaya, Bhilai Nagar Chhattisgarh

sheikhsalma10@gmail.com

Abstract: *This Paper elucidates the application of data mining in bioinformatics. Data mining has the potential to provide the necessary tools better understanding of gene expression, drug design and other emerging problems in genomics and proteomics. Bioinformatics is the science of managing, mining, and interpreting information from biological sequences and structures. Recent progress in data mining research has led to the development of numerous efficient and scalable methods for mining interesting patterns in large databases. we analyze how data mining may help bio-medical data analysis and outline some research problems that may motivate the further developments of data mining tools for bio-data analysis. It also highlights the databases of bioinformatics and some of the current challenges of data mining in bioinformatics. Biological data analysis and the link between data mining and bioinformatics is explained.*

Keywords: *Bioinformatics, Data Mining Tools, Protein Sequences Analysis, Bioinformatics Tools.*

I. INTRODUCTION

Bioinformatics is the science of managing, mining, integrating and interpreting information from biological data at the genomic, proteomic, phylogenetic, cellular or whole organism levels. Analyzing large biological data sets requires making sense of thr data by inferring structure or generalization from the data.

Application of Data Mining in Bioinformatics Applications of data mining to bioinformatics include gene finding, protein function domain detection, function motif detection, protein function inference, disease diagnosis, disease prognosis, disease treatment optimization, protein and gene interaction network reconstruction, data cleansing, and protein sub-cellular location prediction. For example, microarray technologies are used to predict a patient's outcome. On the basis of patients' genotypic microarray data, their survival time and risk of tumor metastasis or recurrence can be estimated. Machine learning can be used for peptide identification through mass spectroscopy. Correlation among fragment ions in a tandem mass spectrum is crucial in reducing stochastic mismatches for peptide identification by database searching. An efficient scoring algorithm that considers the correlative information in a tunable and comprehensive manner is highly desirable.

Data mining is the use of automated data analysis techniques to uncover previously undetected relationships among data items. Data mining often involves the analysis of data stored in a data warehouse. Data mining helps the scientists and the researches to

extract the useful information from the huge amount biological data at hand by providing sophisticated techniques . It is a technique applied for the discovery of patterns hidden in large data sets, focusing on issues relating to their feasibility, usefulness, effectiveness and scalability. Combination of soft computing and data mining in a constructive way can effectively be used for knowledge discovery in large databases.

II. BIOLOGICAL DATA ANALYSIS

Biological data mining is a very important part of Bioinformatics. Following are the aspects in which data mining contributes for biological data analysis –

Semantic integration of heterogeneous, distributed genomic and proteomic databases. Alignment, indexing, similarity search and comparative analysis multiple nucleotide sequences. Discovery of structural patterns and analysis of genetic networks and protein pathways. Association and path analysis. Visualization tools in genetic data analysis.

Data mining is defined as the process of automatically

extracting meaningful patterns from usually very large quantities of seemingly unrelated data. It is an alternative to manual searching which is time consuming and a very cumbersome. Data mining has had considerable success in various fields and environment. Data mining isn't an endpoint, but is one stage in an overall knowledge-discovery process.
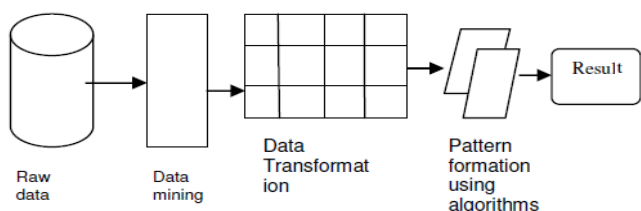
Figure 1 Operations of Data Mining

III. NEED FOR DATA MINING IN BIOINFORMATICS

The entire human genome, the complete set of genetic information within each human cell has now been determined. Understanding these genetic instructions promises to allow scientists to better understand the nature of diseases and their cures, to identify the mechanisms underlying biological processes such as growth and ageing and to clearly track our evolution and its relationship with other species.
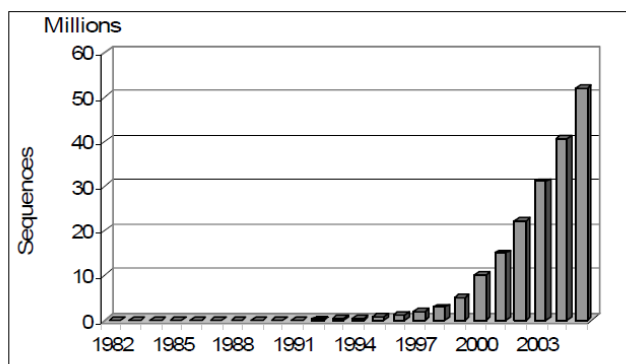

Figure 2 : Growth of GenBank (1982-2005)

Biologists, like most natural scientists, are trained primarily to gather new information. Until recently, biology lacked the tools to analyze massive repositories of information such as the human genome database. Luckily, the discipline of computer science has been developing methods and approaches well suited to help biologists manage and analyze the incredible amounts of data that promise to profoundly improve the human condition. Data mining is one such technology.

IV. APPLICATIONS OF DATA MINING IN BIOINFORMATICS

Applications of data mining in bioinformatics include gene finding, protein function domain detection, function motif detection, protein function inference, disease diagnosis, disease prognosis, disease treatment optimization, protein and gene interaction network reconstruction, data cleansing, and protein sub-cellular location prediction.

Applications of data mining to bioinformatics

1. Gene finding

2. protein function domain detection,

3. Function motif detection,

4. Protein function inference

5. disease diagnosis,

6. Disease prognosis,

7. Disease treatment optimization,

8. Protein and gene interaction network

9. Reconstruction,

10. Data cleansing, and

11. Protein sub-cellular location prediction.

12. Analysis of protein and DNA sequences

V. OPERATIONS IN DATA MINING

Data mining is conducted against data accumulated in OLTP repositories, data warehouses, data marts and archived data. The steps for data mining follow the following pattern:

A. DATA EXTRACTION

Data selection and sampling from extracted data by data warehouses, databases data marts repositories is a first challenging step in data mining. Data mining requires a controlled vocabulary, usually implemented as part of a data dictionary, so that a single word can be used to express a given concept.
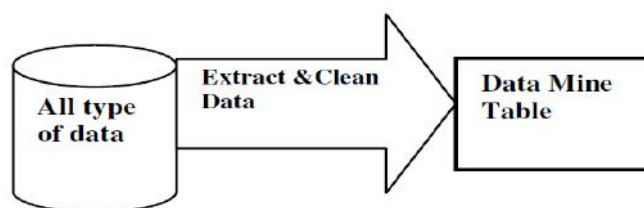

Figure 3 Data Extraction

B. DATA CLEANSING

The data collected are not clean and may contain errors, missing values, noisy or inconsistent data. So we need to apply different techniques to get rid of such anomalies. Once the is extracted it has to be preprocessed and cleaned. This is done in following steps:

- Data Characterization
- Consistency Analysis
- Domain Analysis

C. DATA TRANSFORMATION

The data even after cleaning are not ready for mining as we need to transform them into forms appropriate for mining. The techniques used to accomplish this are smoothing, aggregation, normalization etc.

D. DATA MINING

Now we are ready to apply data mining techniques on the data to discover the interesting patterns. The process of data mining is concerned with extracting patterns from the data, Techniques like clustering and association analysis are among the many different techniques used for data mining.
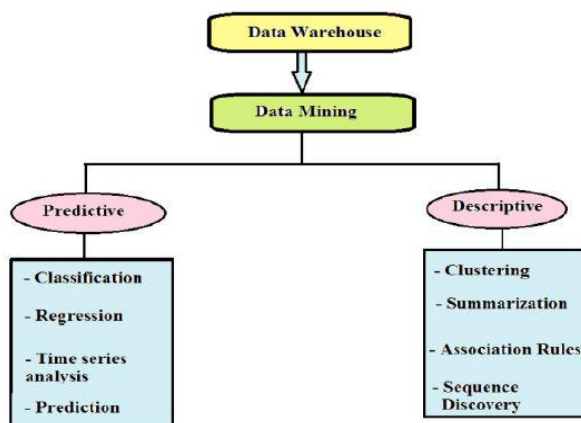

Figure 4 Data Mining Techniques

E. APPLYING DATA MINING ALGORITHM

Machine learning methods have wide applicability in data mining algorithms. It includes statistics, biological modeling, adaptive control theory, psychology, and artificial intelligence. Basically genetic algorithm and neural networks take a major part as a technique to in biological data. Similarly, adaptive control theory, where parameters of System change dynamically to meet the current conditions, and psychological theories, especially those regarding positive and negative reinforcement learning, heavily influence machine learning methods.

Table 1: Machine Learning Technologies and Their Applicability to Data-Mining Methods.

Machine Learning Technologies	Data Mining Methods				
	Classification	Regression	Segmentation	Link Analysis	Derivation& Deviation
Inductive Logic Programming	X	X			
Genetic Algorithms	X	X	X		
Neural Networks	X	X	X		
Statistical Method	X	X	X	X	X
Decision Trees	X		X		
Hidden Markov Model	X				

F. DATA MODELING

Data modeling basically is a process of structuring and organizing the data, and then these structured data are implemented in database management system. Today's biological world demands for heavy exploitation of data These data as are in various forms which has to be capsulated in a meaning full manner .The data are in disparate formats, remotely dispersed, and based on the different vocabularies of Various disciplines. Furthermore, data are often stored or distributed using formats that leave implicit many important features relating to the structure and semantics of the data.

Data modeling is the formalization and documentation of existing processes and events that occur during application software design and development. Data modeling techniques and tools capture and translate complex system designs into easily understood representations of the data flows and processes, creating a blueprint for construction and/or reengineering.

G. PATTERN DISCOVERY

In bioinformatics, pattern recognition is most often concerned with the automatic classification of character sequences representative of the nucleotide bases or molecular structures, and of 3D protein structures. The following diagram gives the gist of pattern recognition and discovery process.
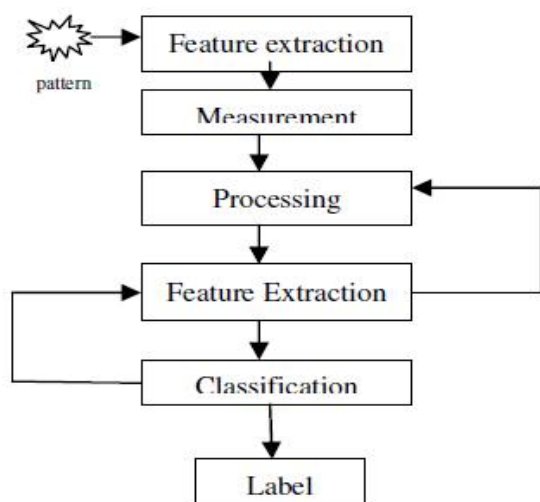
Figure 5 Pattern Recognition And Discovery Process

H. DATA VISUALIZATION

Visualizing biological data is one of the most challenging part of data mining process. In this modern, digital society, how the data is visualized becomes the prime facto, when it comes to communicating or understanding complex concepts. Better the data visualized, better the concepts will be clear. Visualization technologies can provide an intuitive representation of the relationships among large groups of objects or data points that could otherwise be incomprehensible, while providing context and indications of relative importance. The "Sequence Visualization" and "Structure Visualization are types of data visualization techniques.

VI . Conclusion:

Bioinformatics and data mining are developing as interdisciplinary science. Bioinformatics provides the opportunities for development of novel and improved data mining methods. Active and collaborative research by the academia as well as the industry is needed because of the special characteristics of biological data and the extremely high importance of bioinformatics research. However, data mining in bioinformatics is hampered by many facets of biological databases including their size, number, diversity and the lack of a standard to aid the querying of heterogeneous data and the information they contain.

Here the basics of data mining have provided a short overview of bio data analysis from a data mining perspective. Although a comprehensive survey of all kinds of data mining methods and their potential or effectiveness in bio data analysis is well beyond the task of this short survey. It is believed that active interactions and collaborations between these two fields have just started. It is a highly demanding and promising direction, and a lot of exciting results will appear in the near future.

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A Review Paper in Smart Green House and Agriculture using Internet of Things (IoT)

Mukesh Kansari
Ph.D (Research Scholar) Department of Computer Science & Engineering
MATS School of Engineering & IT, Arang, Raipur (Chhattisgarh), India
E-mail: kansari256@gmail.com

Abstract: *Smart Green House and Agriculture android app is succeed in the direction of monitor as well as supervision the microclimatic atmosphere within a Green House and agriculture. since the green house simply obtain top soil moisture, dampness and warmth sensor assessment toward android app , according on the way to sensors standards and we locate predefined sill values in favor of every one sensor ,depending on top of sensor readings we are leaving to manage using water atomizer , cooling fan , rooftop and center glow as well as immediately force down the push button in android app we be able to build on/off motors and it as well have datasheet of all horticulture plantation , agricultural estate and spice sensible safety measure substance for monitoring and scheming. The purpose of this scheme is in the direction of intend an easy, effortless to establish, consumer gracious to observe and documentation the values of heat, humidity, soil-moisture and daylight of the normal situation that are incessantly customized and prohibited in organize optimize them to accomplish highest stand enlargement and surrender. The consequence shows with the intention of the circumstances individual in sensor's record and scheme in really is appropriate. The achieved analysis effect concludes with the purpose of the arrangement is working correctly. The Internet of things (IoT) is a plan of included computing strategy, usual and digital machines, substance, and nature or public that is provided with unique identifiers (UIDs) and the aptitude to relocate information more a network without requiring human-to-human or human-to-computer communication[1][2].*

A growing portion of IoT policy are twisted for consumer make use of, including associated vehicle, home automation, wearable technology, linked healthiness, and appliance with distant monitoring capability[10].

IoT strategy is a constituent of the better idea of home automation, which is intelligent to comprise illumination, heating and appearance breaking in, medium and safety measures systems. Long-standing profit might contain energy reserves by mechanically ensuring illumination and electronics are twisted rancid [10].

Keywords : *Agriculture, Soil, IoT, Greenhouse, Sensor node, Etcs.*

1. Introduction:

The term "Internet of things" was to be expected coined as a result of Kevin Ashton of Procter & Gamble, in a while MIT's Auto-ID Center, in 1999, although he prefer the expression "Internet *for* things". At with the intention of tip, he viewed radio-frequency identification (RFID) as vital to the Internet of things, which would permit computers to supervise all human being things. Important the Internet of things considering with the purpose of "simply the position in point in time at what time additional 'things or objects' were associated to the Internet than people"[10].

IoT strategy are an element of the superior idea of home automation, which be able to comprise lighting, heating and air conditioning, medium and safety systems. Long-term benefits could include energy savings by automatically ensuring lights and electronics are turned off [10]. A smart home or automated home could be based on a platform or hubs that control smart devices and appliances [10]

There is several IoT applications during agricultural such as collecting information on temperature, rainfall, humidity, wind speed, pest infestation, and soil content. These facts can be worn to mechanize undeveloped techniques, obtain knowledgeable decisions to look up quality and quantity, minimize risk and waste, and reduce effort required to manage crops. For example, farmers can now monitor soil temperature and moisture from afar, and even apply IoT-acquired data to precision fertilization programs [10].
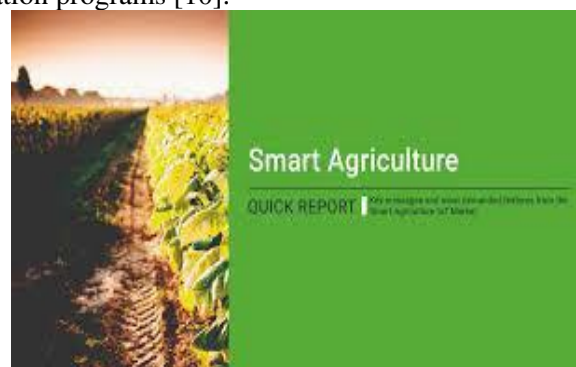

Figure 1. Smart Agriculture in IoT.

Agriculture is an industry with the aim of uses a lot of water during the world. This reserve is supposed to be used in an well-organized way devoid of affecting the manufacture (Jiber et al., 2011). The obstacles in measuring as well as monitoring water practice and incompetent irrigation systems outstanding to person organize are the most important contributors to this circumstance. The farmers are alert with the purpose of water deficiency or in excess of watering may injure the yield [11].

There be a lot of techniques accessible used for the accuracy agriculture to observe and manage, situation designed for the expansion of numerous crops. appropriate to not the same allocation of rain water, it is extremely not easy to condition needed farmer to manage the water equally to all the crops in whole farm it requires some irrigation method that suitable for any climate situation, earth types and multiplicity of crops[2].

This Review paper has a conversation concerning or about Smart Green House and Agriculture android app is succeed in the path of observe as well as direction the microclimatic ambiance contained by a Green House and agriculture.

II.IoT Agriculture Applications.
Let's check out the main IoT Agriculture Applications:-.

(i). Precision Farming

Precision agriculture (PA), dependency undeveloped or location exact crop management (SSCM) is a agricultural organization idea based resting on observing, measuring and responding on the way to put in the ground along with intra-field inconsistency during crops. The objective of accuracy farming explore is to describe a decision support system (DSS) intended for entire farmhouse administration with the purpose of optimizing income on inputs at the same time as preserving source.
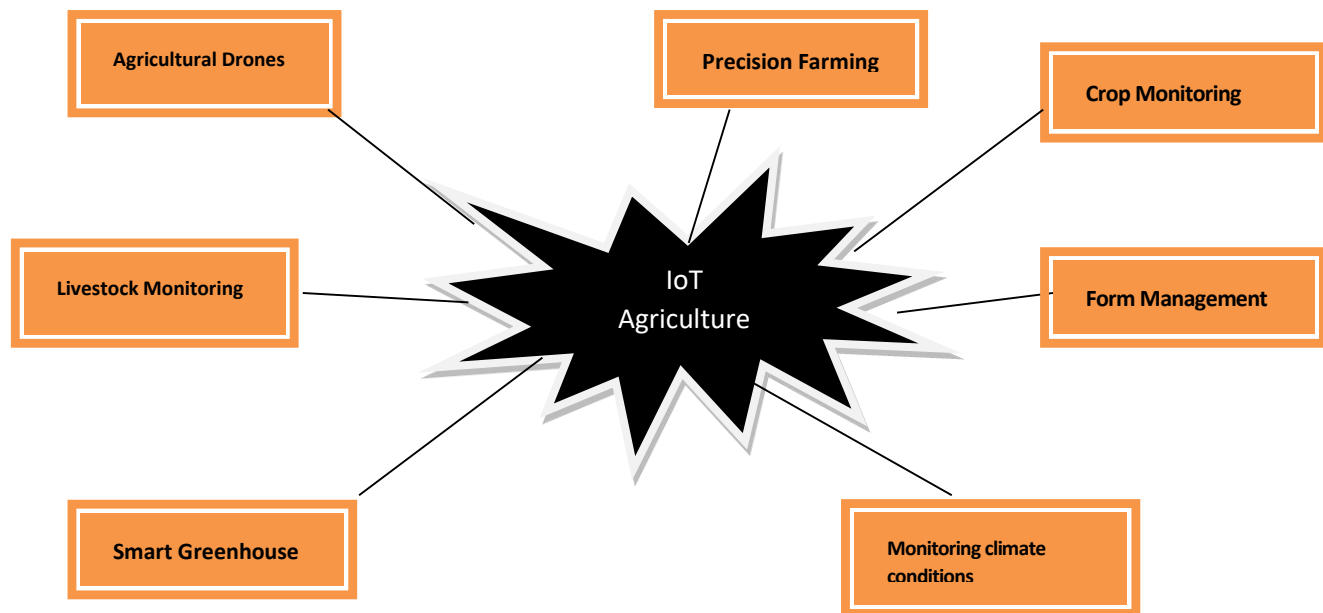

Figure 2. IoT Agriculture Applications.

(ii) Agricultural Drones
Drones possibly will be extremely useful designed for agriculture given that they be capable of spray a range of pesticides or basically watercourse videotape to allow grower distinguish what is leaving resting on in a concurrent manner [12].

(iii). Livestock Monitoring
Sensors and wearable's build it potential for farmers toward makes sure the condition of livestock and gets access to all data [12]. Farmers may see the site of cows, hen, goats, as well as so on, observe their physical condition. It helps farmers forecast diseases and separate an creature beginning additional brethren in the direction of keep away from a getaway [12]. In addition, farmers might decrease expenses resting on person labor since they always know everything about their livestock and they don't need to send employees to check them [12].

(iv). Smart Greenhouse
Smartphone and drug applications are attractive more and more well-liked in exactitude agriculture. Smartphone approach through a lot of useful applications already installed, including the camera, microphone, GPS, and accelerometer. There are also applications completed devoted to a variety of farming applications such since field mapping, tracking animals, obtaining weather and crop information, and more. They are easily portable, affordable, and

have a high computing power [1][2]. Installed systems with multiple sensors monitor conditions and parameters in a greenhouse and automatically adjust equipment to provide the most appropriate condition for each greenhouse [12].

(v). Monitoring climate conditions
Climate stations ready by means of elegant sensors be able to bring together weather data and send useful information to a farmer. Moreover, first, the information is analyzed by special software and farmer gets ready-made analysis that helps him have a detailed forecast and avoid crop losses [12].

(vi). Crop monitoring
While during the container of weather situation monitoring, sensors for crop monitoring also collect all information like crop health, humidity, precipitation, temperature, and other parameters. If present are some deviations, farmers might recognize them beforehand and take appropriate actions. Also, sensors help farmers determine when the best moment to plant crops and harvest them[12].

(vii). Farm management systems
Such systems are mandatory to collect all information together and direct it proficiently. Also, such systems contain coverage, logical and accounting skin, consequently it is a must-have intended for farmers [12].

IoT Smart Greenhouse system
Green House is the most excellent solution to organize as well as mange this entire crisis it is further vital to investigate a technique with the purpose of give ideal evaluating and scheming to build up appropriate atmosphere. Great area covered by sensor network this be able to found green house with accuracy environment necessary for unusual crops. This situation builds up and about by using two technologies it as well as make unclear computing. By means of IOT(Internet on things) we control policy or any environmental requirements anytime, everyplace along with the darken which provides storage liberty along with computing wealth to realize a web page [2].

This work is mainly concerning the development of existing farming practices by using up to date technologies for improved give up. This job provides a model of a smart greenhouse, which helps the farmers to bring elsewhere the occupation during a farm mechanically devoid of the exercise of a great deal physical scrutiny [2].
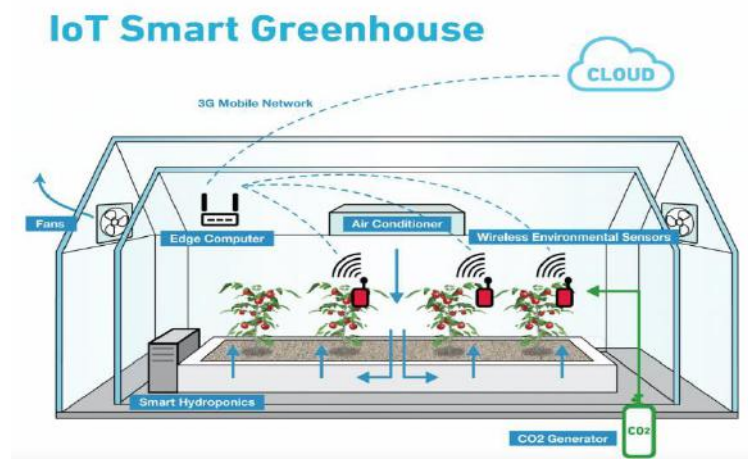

Figure 3. IoT Smart Greenhouse system.

Challenges for IoT in agriculture
The utilize belongings in favor of IoT in agriculture are continuous. There are a lot of traditions smart devices can facilitate you enlarge your farm's presentation and proceeds. However, agriculture IoT apps growth is rejection simple job. There are confident challenges you require to be conscious of condition you are allowing for investing in elegant agricultural.

A. Hardware
To construct an IoT explanation for agriculture, you want to decide the sensors in favor of your tool (or generate a tradition one). Your option determination depends on the types of data or information you want to bring together and the reason of your solution. In some container, the excellence of your sensors is vital to the achievement of your item for consumption— it resolve depend resting on the accurateness of the together data or information and its consistency.

B. The Brain

Data analytics is supposed to exist at the central part of all smart agriculture result. The collected statistics or data itself will live of small assist if you cannot build sense of it. Thus, you require including powerful data analytics capabilities and applying predictive algorithms and machine learning in arrange to get actionable insights based on the composed data or information.

C. Maintenance

Maintenance of your hardware is a challenge with the purpose of is a main significance for IoT crop in agriculture, as the sensors are classically worn in the grassland and be able to be without difficulty damaged. Thus, you need to make confident your hardware is tough and easy to maintain. if not, you will require to restore your sensors additional frequently than you would similar to.

D. Mobility

Smart farming applications must be customized for utilize in the field. A business owner or farm manager should be able to access the data or information on location or slightly via a Smartphone or desktop computer. good thing, every one associated machine should be self-sufficient and contain sufficient wireless range to converse with the other devices and send data or information to the innermost server[1][2].

E. Infrastructure

To make certain with the intention of your smart farming application performs well (and to construct certain it know how to handle the data load), you require a hard inner infrastructure. Also, your inner system includes to be protected. Failing in the direction of correctly secure your system only increases the likeliness of a celebrity contravention keen on it, robbery your data or information, or yet attractive manage of your independent tractors.

Challenges for IoT in greenhouse

Let's check out the main IoT Challenges in Greenhouse [15]:-.

   I. Heat leaving superior or inferior than a confident quantity.
   II. Elevated moisture – consequential in harvest transpiration.
  III. Concentration of water steam.
  IV. Water disappearance beginning the damp earth.
   V. Make use of water appropriately.
  VI. Check expenditure of resources.
 VII. Manage surroundings for enhanced acquiesce.
VIII. Keep authority, electrical energy and water utilization.

III.   METHODOLOGIES (SENSORS}

A. Soil moisture

Soil moisture sensors determine the volumetric irrigate satisfied in soil. Given that the straight gravimetric dimension of complimentary dirt damp requires removing, ventilation, and weighting of a trial, soil humidity sensors determine the volumetric water contented ultimately by with a little additional things of the earth, such since electrical conflict, dielectric steady, or interface among neutrons, seeing that a substitute intended for the humidity changeable. Dirt dampness sensors usually submit to sensors with the purpose of approximation volumetric water satisfied.

B. Temperature

The sensor panel itself has together analog and digital outputs. The analog output gives parameters voltage rating that allows guessing the moisture satisfied of the soil. The digital output gives a simple —on/off‖ when the soil moisture content is above a certain value. In universal a warmth sensor is a tool which is sketch particularly in the direction of determine the warmess or icy of an article.DHT11 is a precision IC temperature sensor with its output proportional to the temperature (in °C).With DHT11,the temperature can be measured more accurately than with a thermostat.

C. Sunlight

The light dependent resistor or also known as LDR sensor is the most important slice of apparatus in circuit. Without it, it is impossible to detect whether it is shadowy or glow. during the brightness this sensor will have a resistance of a small number of hundred ohms at the same time as in the shady it can have a more than a few mega ohms.

D. Raspberry-pi

The is a sequence of recognition card-sized single-board computers residential in the United Kingdom by the Raspberry Pi base to endorse the training of essential computer science in schools in addition to developing countries. A Raspberry Pi is a general-purpose processor, usually by means of a Noobs working scheme, and the ability to run various program. Raspberry Pi is most excellent used at what time you require a fully-developed central processing unit , powerful an additional complex android, performing numerous farm duties, responsibility powerful calculations. Raspberry Pi plank is a fully useful supercomputer or fully- developed recognition certificate sized. It has all the accessories of a PC, with a committed recollection, computer, and a graphics card for output through HDMI. It even runs a specially outline version of the Noobs operating system and it is easy to install in most Noobs software, as well as worn the Raspberry Pi as a performance video game emulator or medium banner by way of a small piece of endeavor.

IV.   CONCLUSION:

India is a farming–leaning nation state. In favor of the excellence and efficiency development of greenhouse and open field crops, it is necessary to measure and control several interacting physical variables. These farm duties can only live proficient via manage systems by means of build in software'. Erecting greenhouse is luxurious [1][2]. Computerization technology is import in India for this reason it is exclusive. A lot of farmers cannot take on the orangery knowledge outstanding in the direction of its far above the ground rate [1][2].

Our scheme things to see concerning the move toward to control the surroundings within Greenhouse. The greenhouse organizer right mined the change in the temperature (waterless warmth, damp warmth), moisture, top soil moisture etc. from side to side input sensors as well as processes to get manage act [1].

Real moment in time monitor goods consistent, appropriate in order of yield and soil category, significant in enchanting decisions in favor of produce manufacture improve[1].

The evaluation of agricultural invention system is an instance consuming as well as not easy progression since it means performing visits to preferred crop field to be able to determine and register certain physical, chemical and biological characteristics of the cultivated areas and analysis of all input parameters [1].

This Review paper has a discussion regarding or concerning elegant Green House and Agriculture android app is do well within the trail of watch over and above way the microclimatic atmosphere restricted by a Green House and agriculture.

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Application of ICT on Student Performance: an analysis based upon ORANGE and TANAGRA

Sumati Pathak[1] , Neelam Sahu[2] ,   Rohit Raja[3] , Pragya Bhatt[4], Rama soni[5]

[1]P.Hd Research Scholar, Dr. C. V. Raman University , [2]Associate Professor , Dr. C. V. Raman University, [3]Professor, Sreyas Institute of Engineering and Technology Hyderabad, [4]Guest Lecturer, Govt. Bilasa Girls PG college Bilaspur(CG), [5]Guest Lecturer, Govt. Bilasa Girls PG college Bilaspur(CG).

[1]sumati.gaurha@gmail.com , [2]neelamsahu16@gmail.com , [3]rohit.raja@sreyas.ac.in , [4]prt297@gmail.com , [5]ramasoni8@yahoo.com

Abstract:

The analysis of overall performance of the student can easily be revealed by using data mining techniques in an efficient way, here we will use two tools of Data Mining on student's performance Data set, that are ORANGE and TANAGRA, similarly application of ICT is responsible to increase overall performance of all the students. Hence we can conclude that application of ICT as well as Data mining tools both can give a positive effect on student's performance if used together.

TANAGRA is an "open source project" as every researcher can access the source code and their algorithms very easily as long as they agree and confirm to the software distribution license. The main purpose of the TANAGRA project is to give researchers and students user friendly data mining software [5]. Orange software is also open source software of data mining. Orange widgets provide a graphical user's interface to orange's data mining and machine learning method [6].

Now a days ICT application is also very useful and play main role to increase student performance in every field with education E-Learning, Open learning and distance Learning as well, and also in other different applications are best for students. So with the help of Tanagra and Orange Software and by using ICT applications we will try to analysis about student performance.

With the help of this research student will be able to increase their performances by using ICT more and more we will confirm the impact of the implicating ICT on the student's overall performance by analyzing the performance of the student. Tanagra and Orange of data mining will help us in analyzing student performance.

Keywords: - Orange, Tanagra, ICT

Introduction :

In this paper we are using ORANGE data mining tool and TANAGRA data mining tool. Here we are using 6 classification algorithms in our paper. With this analysis we are trying to encourage students and institutes for making use of ICT tools, so that they can increase performance in each and every field. Both the tools are open source data mining tools. Data mining is the extraction of intriguing, relevant, constructive, previously unexplored and substantially valuable patterns or information from huge stack of data that can be used to make valid predictions [1]. Today Information and Communication Technology (ICT) plays main role in higher education, especially in the field of computer science [2]. Here we are analyzing that what is the impact of ICT (if used) on student's performance. Data Mining is a process which helps us to find the data that is fruitful. Classification is an approach based on machine learning process which can categorize and organize the data came from analysis.

Materials :

We have used Portuguese data set came from UCI Machine Learning Repository. This data actually have come from an environment where ICT technology has been used, however there are so many ICT techniques that is not used so far but we can implement those techniques to get more better results from any Data Set.

These data set already used and upload by P. Cortez and A. Silva. Using Data Mining to Predict Secondary School Student Performance. In A. Brito and J. Teixeira Eds., Proceedings of 5th Future Business Technology Conference (FUBUTEC 2008) pp. 5-12, Porto, Portugal, April, 2008, EUROSIS, ISBN 978-9077381-39-7 [3].

In our data set there are overall 34 attributes which have several different capacities in these 34 attributes we have selected one attribute as our target which is actually binary attribute i.e. it has 1 & 0 only to be used.

Methodology:

In this paper we are using Classification techniques of data mining and their algorithms help us to analyze of data accurately. With the help of classification technique we can easily categorize data and organize data. We have used K-NN, Decision Tree, SVM, Random Forest, Neural Network, and Naïve Bayes algorithms in Orange and compare result between each other. Same algorithms are used in Tanagra and compared between each other as well as we are comparing results of TANAGRA and ORANGE with each other and find accuracy percentage.

Proposed Model:
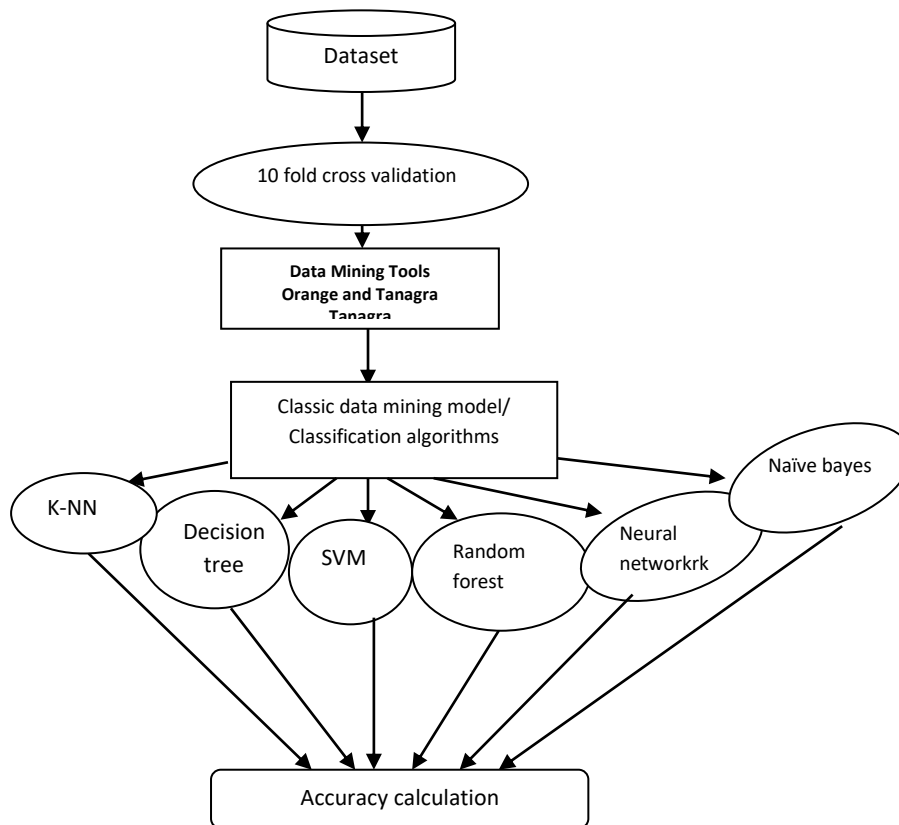In this paper we have used **10 fold Cross Validation method**. Our proposed is shown below:-

Fig. 1 – Proposed Model of Research

Discussion:

First of all we have collected student performance data from UCI machine learning repository. Then we have filtered the data and put it in the format that is acceptable in any data mining tool for further analysis. For analyzing the data we have used ORANGE and TANAGRA tool in which we have used classification techniques and their algorithms like- K-NN, Tree, SVM, Random Forest, Neural network and Naïve bayes. We have chosen 10 fold cross validation technique with help of which we have got different results according to different algorithms from both the tools. Then we have compared result of both tools and got accurate result to take final decision which help students to encourage them to use ICT application to increase their performance.

Analysis:

The overall analysis of dataset in both the tools can be cleared by the following screen shots:
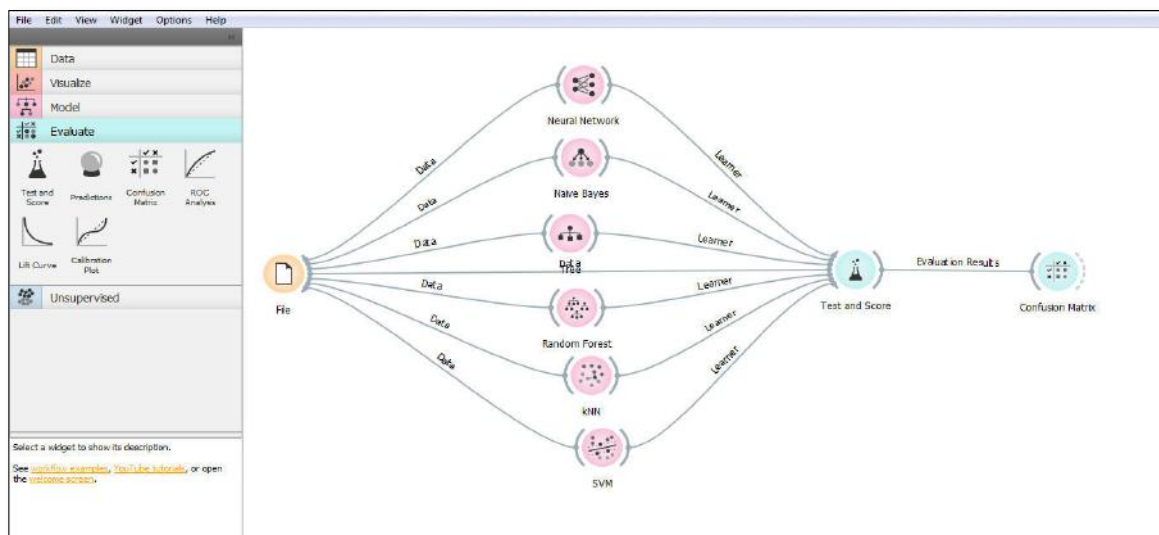

Fig. 2-Screen shot of orange data mining tool's original model.

By using Tanagra and Orange we have analyzed data set and created the following table, which can clearly differentiate the result between both the tools:-

Classification Algorithms	Orange	Tanagra
K-NN	**98.50**	85.78
Tree	**91.0**	90.0
SVM	**96.6**	91.53
Random Forest	**99.1**	NA
Neural N/W	**97.0**	92.13
Naïve Bayes	**95.8**	89.19

Table – 1.1

Here in this table we can see that Orange is giving us best results compared to Tanagra in each of the algorithm. And also we can see here that Random Forest algorithm is not available in Tanagra but it is in Orange the Random Forest algorithm gives us more accurate result than other algorithms.

Final Finding:

Finally we find out that Random forest is best techniques to calculate accuracy in Orange software but in Tanagra software the Random Forest is not available but if we analyze the result of Tanagra only we can find out very easily that Neural Network is giving the accurate result than other techniques.

At last we are comparing the result of Orange and Tanagra with each other and we have found that Orange is best and efficient than Tanagra in all algorithms. And finally we can say that overall student's performance is more affected by ICT applications and this table – 1.1 is proof that ICT tools are play very important role in Education field on student's performance as internet usage are calculated here as one of the most important attribute for our data set.

Results:

Hence we can see here that the data came from Orange is somehow more efficient than the data came from Tanagra. Our result can be cleared from table – 1.1 and we can see that here Random forest is best in category of algorithms and Orange is best in tools than Tanagra. Thus we can say that over all ICT tools are very important tools to improve student's performance as here the internet feature plays important role in our research.

We are showing the data which we have got from processing the data sets in both the tools of data mining Orange and Tanagra. However we have not use ICT Technology in the given table but here we are using one attribute that uses one important thing of ICT which is internet.

Recommendation:

Here we can see the major difference between these two tools and these differences can be minimized by using more ICT techniques in any dataset. Now the days ICT is playing main role in higher education field and in this way on student's performance also, ICT has many tools, general ICT tools are as follows:-

- Internet enabled Desktop and laptops and Tablets
- Projectors and Printers
- Digital Cameras and Microphones
- Smart boards and Web-boards
- Scanners
- Mikes and Loud speakers
- Audio Books

That's all are useful for skill development of students and increasing overall performance.

Conclusion:

We can concluded that we have several methods and several techniques to deal with in which we can get many more result but in the recent time we have worked upon this data in the given methods only and we have got the result as shown in the table -1.1. As we can see that some of the tools of data mining has given more accurate result than the other tools but this situation is when then we have not use any ICT Framework however many ICT tools are used to major students behavior for example habit of Internet or courses that are provided by the school but still we have not use any framework so far. Instant we are using data that is generated by some ICT tools and tested the data in both data mining software to have accuracy measurement and here we can see that Orange is better in some way.

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Appreciation of job scheduling algorithm to improve Computating performance in Grid System

Surendra Kumar Patel[1]
Assistant Professor
Dept. of Information Technology
Govt.Nagarjuna P.G. College of Science,
Raipur, Chhattisgarh, India
Email: surendrapatelit2004@gmail.com

Anil Kumar Sharma
Assistant Professor
Dept. of Information Technology
A.P.S.G.M.N.S. Govt. P. G. College
Kawardha, Chhattisgarh, India
Email: sharmaanil.mail@gmail.com

Abstract— Grid Computing consists of a group of programs and resources which are distributed among the machines on the network. A network system has a dynamic environment and distributes decentralized resources, to manage these resources we need work planning and load balancing techniques. Many researchers have proposed different approaches and algorithms for programming and load balancing for locally distributed multiprocessor systems. However, they face serious shortcomings when they spread in a networked environment. The grid environment has the ability to solve large-scale scientific IT applications. We propose an efficient scheme to achieve approximately optimal load balancing, while maintaining general communication costs. In this survey, a new job planning algorithm is proposed, called Optimal Dynamic Load Balancing (ODLB). In the proposed algorithm, it perfects and improves the execution efficiency, the search capacity of the local and remote search, the accuracy of the solution and guarantees the load balancing of the programming of the network activities in order to reduce the execution times. OptorSim is a useful open source simulation tool for Grid Computing. In this document, a new data-intensive activity schedule called Optimal Dynamic Load Balancing (ODLB) has been proposed, implemented and incorporated as a new programming package in OptorSim. As indicated in the simulation results, the proposed scheduling strategy that has been added to OptorSim improves the average response time, access to local files and the archiving of remote access activities compared to other common activity programming strategies. Modified OptorSim scheduling package benefitted to computing performance.

Keywords— Grid Computing, Computational Grid, Load Balance, Resource Management, ODLB, OptorSim.

I. INTRODUCTION

Grid computing [1] takes its name from the analogy with the electricity network. A commonly used definition of grid is the Internet-based infrastructure that adds distributed and heterogeneous resources as a set for solving large-scale problems. In the grid environment, resources are provided and managed by several administrators. The availability of network resources varies over time and these changes will affect the performance of activities performed on the network. The programming problem is an important problem in a grid computing environment, due to the heterogeneity of IT resources [2]. The efficient mechanism for identifying resources is one of the fundamental requirements for Grid IT systems, as it helps in the management of supplies and in the development of applications.

There is a wide range of heterogeneous and geographically distributed resources on the grid. For example, there is a single processor, multiprocessors, shared memory machines, distributed memory machines, workstations, etc.

And they have different capabilities and configurations and are managed in multiple administrative domains with different criteria. In practice, resource management and programming in such a complex environment face a major challenge [3] [4].

The main goal of programming is to maximize the implementation of resources and minimize the processing times of all jobs. Several research papers have been conducted on the problem of scheduling jobs in the grid and the different algorithms have advantages and disadvantages, but further analysis and research are still needed to improve the performance of the programming algorithm in the computational grid [5] [6].

II. LOAD BALANCING IN GRID

Load balancing serves to speed up the execution of the activity in resources whose load changes in the execution phase in an unpredictable way. Load balancing is an important term. The aim is to balance the load of each server to increase system performance and resource usage. Load balancing is a process of ordering activities in computational resources and ordering control between activities and their respective processors.

The goal of load balancing is: to optimize the use of resources, to maximize performance, to minimize response times, to avoid overloading in a single node. Load balancing is like a software program listening on the door where customers connect to access services. This request is forwarded to one of the back-end servers with the help of load balancing, which responds consistently to load balancing. This allowed load balancing to respond to the customer without the customer ever being aware of the internal separation of functions. It also prevents clients from contacting back-end servers directly [7]. Load balancing is carried out for following managing purposes.

- Queue length of CPU.
- Low cost update of the workload.
- Less mean job response time.
- Average queue length of CPU.
- Utilization of CPU.
- Method transfer.
- Increase the system throughput.
- Load assessment.
- Relocation of jobs.

The research consists of six sections that are organized as follows:

Section 1 and section 2 describes the introductory part of research. Section 3 presents the literature survey and the

research work carried out in the field of related. Section 4 presents the research methodology used in this research and Optorsim simulator is used to support resource management and task scheduling and other capabilities, such as job allocation, scheduling and balancing of jobs etc. Section 5 presents result analysis and section 6 conclude the research with a summary of the main findings, discussion of future research directions, final remarks and outlines possibilities for work in future.

III. RELATED WORK

The approaches proposed above for the programming problem in traditional networks are not exhaustive. These approaches [8, 9] mainly consider the system and network factors such as maximum load balancing and system life as the main goal in programming, ignoring the interests and needs of users or [10] considering the cost and Makespan as main objective in programming, without load balancing. Buyya et al Reference [11] proposed an economic model for the management and programming of grid resources, using marketing concepts such as commodity market, published price models, negotiation models, net contract models, auction models and other. [12] It proposes two models to predict the completion time of the works in a grid.

The first service model involves the completion time of a job in a grid that offers only one type of service in the grid. The second is the multiple service models that estimates the completion time of a work performed on a service grid representing various types of services. Then, he developed two algorithms that use predictive models to plan jobs in the service grid both at system and application level, so that in application level programming, using a genetic algorithm, the average time of completion of work is minimized through optimal work allocation on each node. [13] [14] describes a resource-aware programming algorithm that uses two algorithms for programming existing activities, Min-min and Max-in. Both algorithms use an estimate of the task completion time and resource execution time. The algorithm presented alternates the previous algorithms based on the number of jobs and resources. An important feature for programming algorithms is that of having a dynamic behavior based on the evolution of the real environment. This algorithm is described in [15].

Author [16] the prediction-based dynamic load balancing algorithm is designed to balance the load between groups using the expected group status. The configured algorithm is applied to the priority programming algorithm. The experimental result shows that the prediction-based load balancing algorithm improves the use of the cluster compared to the existing programming algorithm.

Dynamic programming is able to regulate unexpected system load. Few policies are formed [17, 18] as follows:

- Transfer policy: according to this policy, an activity processed locally or transferred in another way from one host to another based on estimated situations. Migration and rescheduling of activities are included in this policy.

- Selection and Transfer Policy: This policy selects the transferable activity and the under loaded host and migrates the activity to the under loaded host for processing. For this, consider the indirect cost of migration, calls to the global system and execution times.

- Information: completed the necessary information than the system and its nodes, and therefore used by other policies for making decisions.

- Priority assignment policy: determines the priority of the activity, so that it can be processed locally or remotely.

After reviewing the literature on resource scheduling and load balancing algorithm, we applied ODLB whose goal was to minimize overall response time, access to local files, access to remote files and efficient use of networks.

IV. RESEARCH METHODOLOGY

a. Simulation tool and Environment

In this research, the OptorSim [19] simulator is used to simulate the proposed dynamic job scheduling algorithm to maintain job queue size and minimize computation time. There are numerous tools available for simulating resource scheduling algorithms for managing the resources in Grid computing environments. In this research, we used OptorSim simulator. We have evaluated the algorithm by simulating different number of jobs ranges between 100 and 2000 in experiments.

b. OptorSim

OptorSim architecture, which is based on the European Data Grid CMS testbed architecture, was developed by the European Data Grid project. The main components of OptorSim are Resource Broker (RB), Computing Elements (CEs), Storage Elements (SEs), Replica Manager (RM), and Replica Catalog (RC) as shown in figure 1. RB is responsible for submit jobs to the Computing Elements, CEs are responsible for running jobs of data files in the Grid site, SEs
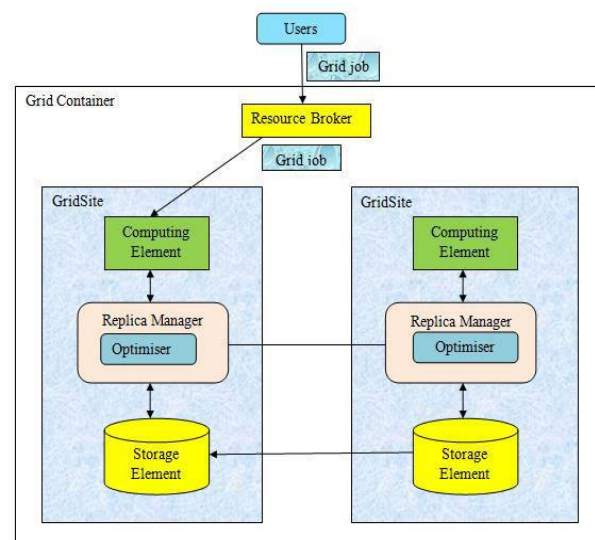

Figure 1: OptorSim Architecture [20]
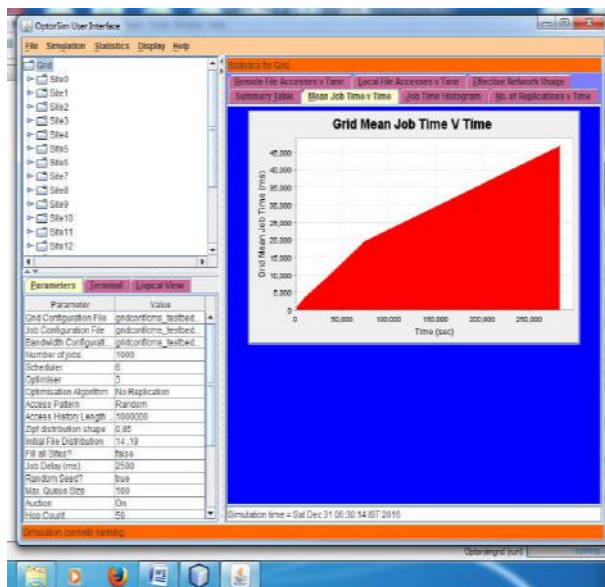
Simulation tool Screen Layout

Figure 2: Simulation Scenario using OptorSim Simulator

Metrics Used

We have used following performance parameters to simulate the results.

- Mean Job Time
- Number of replication
- Total No of Local File Access
- Total Number of Remote File Access
- Effective Network usage

These are the significant parameters which have an effect on the results in optimal manner.

V. SIMULATION EXPERIMENTS AND RESULT

Proposed Optimal Dynamic load Balancing (ODLB) Algorithm.

In this research, we can perform various experiments with different scenario mechanism for dynamic job scheduling.

Simulation Scenario for DLB and ODLB

The simulation parameter values used for DLB and ODLB scheduling algorithm are shown in Table 5.1.

Table 5.1: Grid simulation parameters for DLB and ODLB

Number of jobs	100,200,300,400,500,1000, 1500,2000
The categories of users are	Random
Optimisers	LruOptimiser
access pattern generators	RandomAccessGenerator
maximum queue size	100
Hope count	50

Table 5.2: Mean Job Time Vs Jobs for DLB and ODLB when no. of jobs from 500 to 2000

No. of jobs	Mean Job Time	
	Dynamic Load Balancing (DLB)	Optimal Dynamic Load Balancing (ODLB)
100	5526	4946
200	13125	11578
300	24663	18876
400	28128	23219
500	33747	29318
1000	42390	37970
1500	38521	32733
2000	46861	39012

In table 5.2 and Figure 5.1 to figure 5.2 shown that Mean Job Time of all jobs on Grid for dynamic load balancing and improve dynamic load balancing in resource management. Thus the method of improve dynamic load balancing performs better result than the existing dynamic load balancing. Hence, proposed algorithm gives 15.15% better result compare to existing DLB for the same scenario performance parameters.
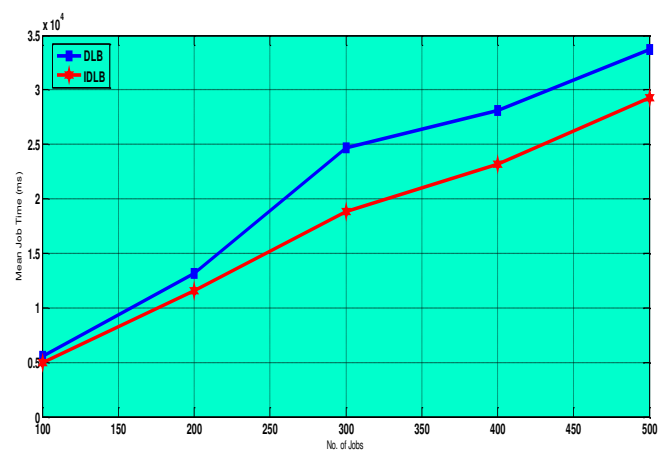

Figure 5.1: Mean Job Time Vs Jobs for DLB and ODLB when no. of jobs from 100 to 500
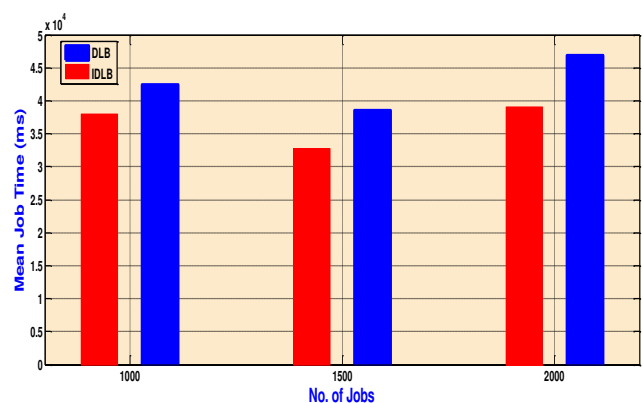

Figure 5.2: Mean Job Time Vs Jobs for DLB and ODLB when no. of jobs from 1000 to 2000

Table 5.3 shows the Number of Replications of all jobs on Grid for dynamic load balancing and improve dynamic load balancing in resource management.

Table 5.3: Number of Replications Vs Jobs for DLB and ODLB when no. of jobs from 500 to 2000

No. of jobs	Number of Replications	
	Dynamic Load Balancing (DLB)	*Optimal Dynamic Load Balancing (ODLB)*
100	152	129
200	266	157
300	254	204
400	290	227
500	442	297
1000	811	561
1500	1352	1292
2000	2501	2243

In this experiment 100 to 2000 jobs are submitted as the user input using scenario-3 performance parameter table.

The simulation results show that the Number of Replications obtained by DLB for 100 jobs is 152 whereas the Number of Replications obtained by the proposed ODLB algorithm for the same number of job is 129. Similarly for jobs, 200, 300, … 2000, which are shown in table 4.15. Hence, the result of the experiment clearly reveals that our proposed technique outperforms the existing technique and gives an optimum improvement of 15.78%.
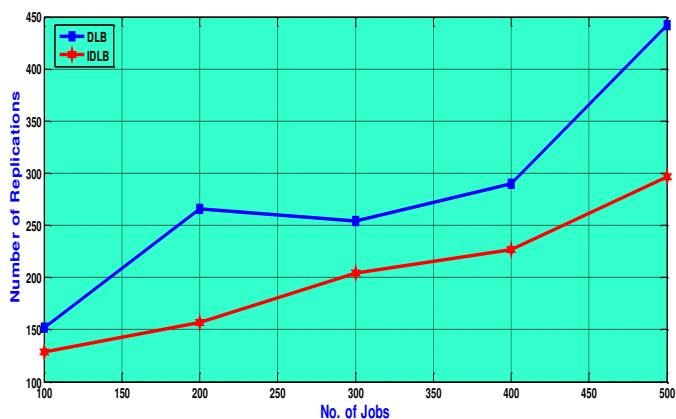

Figure 5.3: Number of Replications Vs Jobs for DLB and ODLB when no. of jobs from 100 to 500
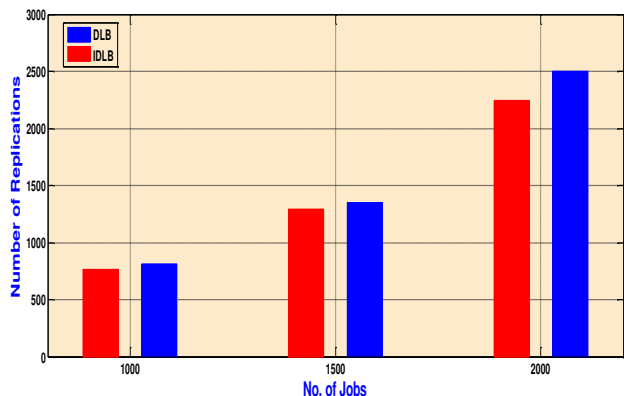

Figure 5.4: Number of Replications Vs Jobs for DLB and ODLB when no. of jobs from 1000 to 2000

Table 5.4: Total Number of Local File Access Vs Jobs for DLB and ODLB when no. of jobs from 500 to 2000

No. of jobs	Total Number of Local File Access	
	Dynamic Load Balancing (DLB)	Optimal Dynamic Load Balancing (ODLB)
100	397	459
200	772	953
300	1047	1180
400	1378	1619
500	2049	2114
1000	4129	4999
1500	9575	10139
2000	13378	14969

Figure 5.5: Total Number of Local File Access Vs Jobs for DLB and ODLB when no. of jobs from 100 to 500
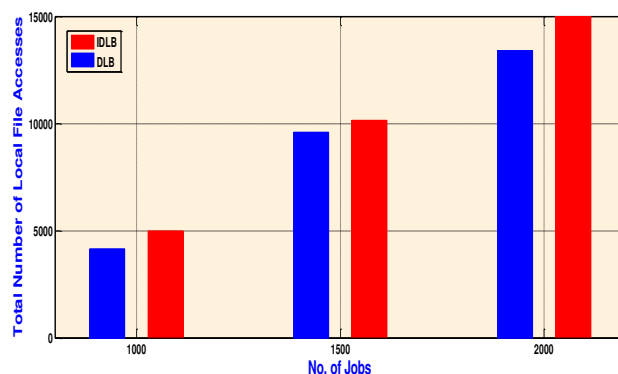
Figure 5.6: Total Number of Local File Access Vs Jobs for DLB and ODLB when no. of jobs from 1000 to 2000

In table 5.4 and Figure 5.5 to figure 5.6 shows that Total Number of Local File Accesses of all jobs on Grid for dynamic load balancing and improve dynamic load balancing in resource management.

Table 5.5: Total Number of Remote File Access Vs Jobs for DLB and ODLB when no. of jobs from 500 to 2000

No. of jobs	Total Number of Remote File Access	
	Dynamic Load Balancing (DLB)	Optimal Dynamic Load Balancing (ODLB)
100	657	635
200	1565	1509
300	2650	2558
400	3492	3185
500	4306	4069
1000	7159	6269
1500	8998	7552
2000	11608	10237

Thus the method of improve dynamic load balancing performs better result than the existing dynamic load balancing.

In table 5.5 and Figure 5.7 to figure 5.8 shows that Total Number of Remote File Accesses of all jobs on Grid for dynamic load balancing and improve dynamic load balancing in resource management. Thus the method of improve dynamic load balancing performs better result than the existing dynamic load balancing.
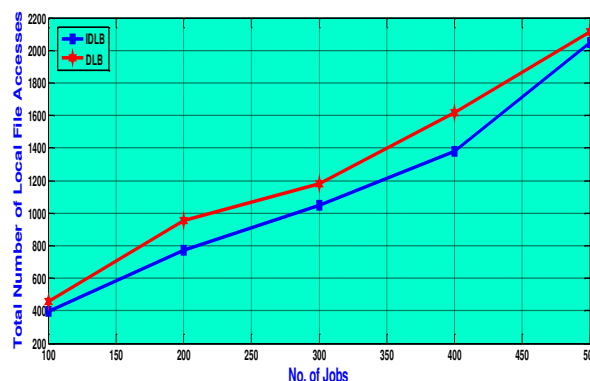

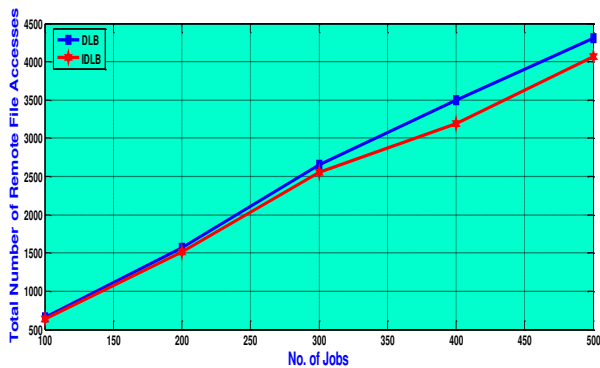*Figure 5.7: Total Number of Remote File Access Vs Jobs for DLB and ODLB when no. of jobs from 100 to 500*
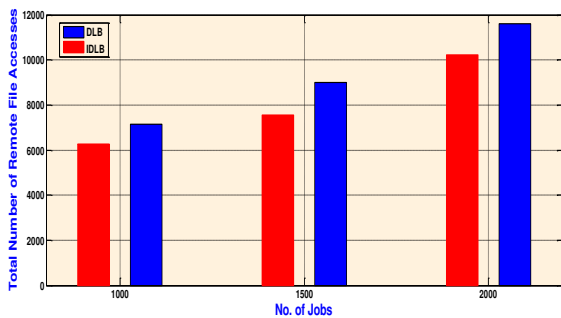

Figure 5.8: Total Number of Remote File Access Vs Jobs for DLB and ODLB when no. of jobs from 1000 to 2000

Table 5.6: Effective Network Usage Vs Jobs for DLB and ODLB when no. of jobs from 500 to 2000

No. of jobs	Effective Network Usage	
	Dynamic Load Balancing (DLB)	Optimal Dynamic Load Balancing (ODLB)
100	0.70103985	0.69835466
200	0.7471644	0.7303814
300	0.77468216	0.7602996
400	0.77659136	0.73105747
500	0.74712825	0.6861297
1000	0.6986003	0.5626997
1500	0.6572605	0.5327211
2000	0.6929462	0.4641094

In this experiment 100 to 2000 jobs are submitted as the user input using scenario-3 performance parameter table.
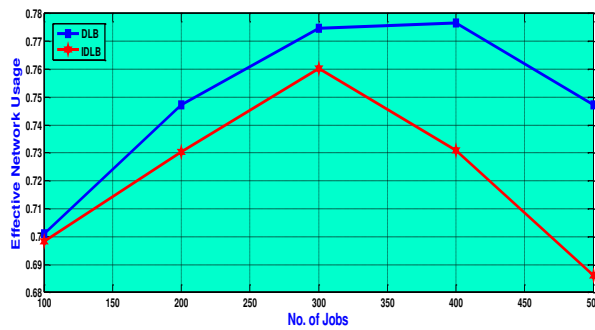
Figure 5.9: Effective Network Usage Vs Jobs for DLB and ODLB when no. of jobs from 100 to 500
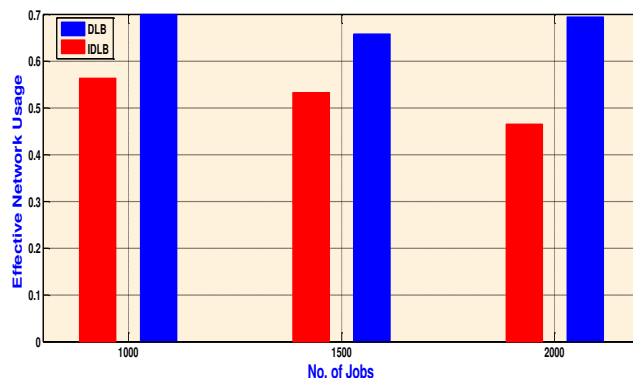
Figure 5.10: Effective Network Usage Vs Jobs for DLB and ODLB when no. of jobs from 1000 to 2000

The simulation result shows that the Effective Network Usage obtained by DLB for 100 jobs is 0.70103985 whereas the Effective Network Usage obtained by the proposed ODLB algorithm for the same number of jobs is 0.69835466. And for Effective Network Usage obtained by DLB for 200 job is 0.7471644 whereas the Effective Network Usage obtained by the proposed ODLB algorithm for the same number of job is 0.7303814. Similarly for jobs, 300, 400, … 2000, are shown in table 5.6 , On the basis of these experimental results we can easily conclude that the proposed ODLB scheduling algorithm is efficient than the existing DLB. It gives 10.86% performance improvement over the existing algorithm.

5.1 RESULTS ANALYSIS FOR DLB AND ODLB

Table 5.2 to 5.6 and figure 5.1 to 5.10 shows the result of conducted various experiments for 100 to 2000 jobs which are submitted as the user input using simulation environment performance parameter of table 5.1. The simulation result show that the Mean Job Time (MJT) obtained by DLB for 100 jobs is 5526 milliseconds whereas the Total Mean Job Time (MJT) obtained by the proposed ODLB algorithm for the same number of job is 4946 milliseconds.

Number of Replications obtained by DLB for 100 jobs is 152 whereas the Number of Replications obtained by the proposed ODLB algorithm for the same number of job is 129. Total Number of Local File Access obtained by DLB for 100 jobs is 397 whereas the Total Number of Local File Access obtained by the proposed ODLB algorithm for the same number of job is 459. Total Number of Remote File Access obtained by DLB for 100 jobs is 657 whereas the Total Number of Remote File Access obtained by the proposed ODLB algorithm for the same number of job is 635. Effective Network Usage (ENU) obtained by DLB for 100 jobs is 0.70103985 whereas the Effective Network Usage (ENU) obtained by the proposed ODLB algorithm for the same number of job is 0.69835466. Hence improvement noted 15.16% in Mean Job Time, 15.78% in number of replication, 11.32% in total number of local file access, 12.93% in total number of remote file accesses and 10.86% in effective network usages. Hence, proposed ODLB scheduling algorithm is efficient than the existing DLB

VI. CONCLUSION

In this research, a new dynamic replication algorithm is proposed. This algorithm is same as the modified Dynamic Load Balancing algorithm, in which we used the set of parameter for replacement of replica with Optorsim simulator by modified OptorSim benefits from a new scheduling package which improves the performance of task scheduling in efficient manner. Moreover, proposed scheduling algorithms have shown improvement in Mean Jobs Time, No. of Replications, Total number of Local file Access, Total Number of Remote File Access and Effective Network Usages. Thus, by increasing the number of jobs, as results, ODLB shown best performance over computation time

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Security Issues on Cloud Based Internet of Things

Jyoti Sharma[1] ,   Surendra Kumar Patel[2] ,   V.K. Patle[3]

[1]Ph.D. Research Scholar SoS in Computer Science & IT Pt. Ravishankar shukla university, Raipur, Chhattisgarh, India
[2]Assistant Professor Dept. of Information Technology Govt.Nagarjuna P.G. College of Science, Raipur, Chhattisgarh, India
[3]Assistant Professor SoS in Computer Science & IT Pt. Ravishankar shukla University Raipur, Chhattisgarh, India
Email: jyotisharma3081@gmail.com, surendrapatelit2004@gmail.com, patlevinod@gmail.com

Abstract: Cloud computing is the modern technology of using a network of remote servers hosted on the Internet to store, manage and process data instead of a local server or personal computer. IoT, on the other hand, is an Internet network of physical devices incorporated with electronics, software, sensors and data exchange. In the past, only cell phones and computers were connected to the Internet, but with the advent of new technologies in the new era, other things like security cameras, microwaves, cars and industrial equipment are now connected to the Internet. This network of things is called the Internet of Things. The main objective of interaction and cooperation between things and objects sent over wireless networks is the fixed objective as a combined entity. The IOT enables billions of applications, people and services to connect with others and exchange information. Due to the accumulated use of IOT devices, IOT networks are subject to various security attacks. The dissemination of effective security and privacy protocols over IOT networks is extremely necessary to ensure confidentiality, authentication, access control and integrity, among others. This research present a study of IOT and cloud computing with an emphasis on the security issues of the two technologies. More precisely, we combine two technologies (i.e., cloud computing and IOT) and present the contribution of cloud computing to IOT technology. Finally, we look at the security challenges of integrating IOT and cloud computing.

Keywords: Cloud Computing, Threats, Security Attacks, Internet of Things.

1. Introduction:

IOT is the phenomenon that connects a variety of things. The Internet of Things allows people and things to connect anytime, anywhere, with anything and anyone, ideally using any path / network and any service. Internet technology that connects devices, machines and tools to the Internet means wireless technologies. More than 9 billion things connected to the Internet. So the Internet of Things is about networks of integrated physical objects. The term Internet of Things (IOT), also known as the Internet of Things, refers to the network interconnection of everyday objects [2].

Today, the human race depends entirely on the information provided on the Internet, which is captured when taking photos or through human participation, i.e. people have limited time and less accuracy, which leads to incorrect and inconsistent data. . Therefore, such a system is needed that can automatically acquire the data and transfer it to the Internet without human interaction with the mechanism.

Fig.1 Cloud Computing [4]

The term Cloud refers to a network or the Internet, on the other hand, Cloud Computing refers to the manipulation, and configuration and access to online applications offers online storage, infrastructure and application of data. Cloud computing is the outsourcing of data storage and processing. Information hosted by a user resides in the global data center network rather than on a local server. It is a subscription service where the user has to pay

monthly fees for the type of service environment he wants. Cloud computing allows users to access their files from remote locations and eliminates the hassle of buying expensive hardware for processing and storage [3].

The rest of the document is organized as follows. In segment 2 there is a review of related research that deals with Internet of Things technology and cloud computing and its integration. Segment 3 discusses Internet of Things technology and some of its basic functions in detail with its architecture. In addition, segment 4 presents and analyzes the cloud-based processing technique and its characteristics. Segment 5 illustrates the security problems in IOT and segment 6 provides an IOT-based security solution and finally segment 7 represents the conclusions of this document and offers new possibilities for the development of future work.

2. Literature review:

In this document, we study and analyze the previous literature available for cloud computing and the Internet of things and their security problems with the solution. The following paragraphs present the documents that contribute significantly to our study.

To begin with, [5] presents a survey of the various security risks that pose a threat to the cloud. In addition, [5] a more specific survey was conducted on the various security issues that arose due to the nature of the service delivery models of a cloud computing system. Additionally, an exploration of obstacles and solutions to provide a reliable cloud computing environment was presented in [6]. Cloud computing is an evolving paradigm with enormous momentum, but its unique aspects aggravating the security and privacy challenges.

Regarding the integration of the Internet of Things and cloud computing, some previous studies have been conducted. In [7] a new platform for the use of cloud computing features is provided to deliver and support ubiquitous connectivity and real-time applications and services for the needs of smart cities. In addition, a presentation of a framework for data obtained from highly distributed, heterogeneous, decentralized, real and virtual devices (sensors, actuators, smart devices) that can be managed, analyzed and controlled automatically by distributed cloud-based services that are shown in [7]. [8] focuses on the authors' attention in the integration of Cloud and IoT, which is what we call the CloudIoT paradigm. Furthermore, many articles in the literature have examined Cloud and IoT separately and, more precisely, their main properties, characteristics, underlying technologies and open topics in [8]. [9] Presents a survey on the integration components: cloud platforms, cloud infrastructure and IoT Middleware. He [14] found important forensic and security issues along with a potentially promising solution for security and forensic challenges and opportunities. Finally [15] focusing on the broad spectrum of authentication protocol schemes leads to the identification of a number of open requirements and issues that must be taken into consideration.

Table 1 lists the results and concepts examined in each article. In more detail, in Table 1, it is possible to independently observe for each related review the useful information relating to the year in which it was published, the exact authors and, as a conclusion for each article, the problems and solutions that have been studied They try.

Table 1 Mapping problems against referenced solutions.

Year	Author	Problems	Solutions
2010	H. Takabi et al. [6]	• Unique aspects exacerbate security and privacy challenges of Cloud Computing	• Explores the roadblocks and solutions to providing a Trust worthy Cloud Computing environment..
2011	S. Subashini & V. Kavitha [5]	• How secure a cloud computing environment is. • Corporate customers remain reluctant to implement their business in the cloud. Security is one of the primary concerns that reduces the growth of cloud computing and complications with privacy and data protection continue to affect the market.	• A new model aimed at improving the characteristics of an existing one the model should not risk or threaten other important features of The current model • Cloud service users need to be careful to understand risks of data breach in this new environment.
2013	G. Suciu et al. [7]	• Cloud Computing and Internet of Things (IoT) are two of the most popular ICT paradigms. • Convergence between cloud computing and IoT has become a hot topic in recent years.	• A new platform to use cloud computing capabilities to deliver and support ubiquitous connectivity and real-time applications and services for smart city needs. • A organization for data obtained from highly distributed, heterogeneous, decentralized, real and virtual devices that can be managed, analyzed and controlled automatically using distributed cloud-based services.

2015	A. Botta et al. [8]	• Cloud computing and the Internet of Things (IoT) are two very different technologies that are already part of our lives. • A new paradigm in which Cloud and IoT merge together intended as a disruptive and enabling factor of a large number of application scenarios	• Cloud and IoT integration, which is called the CloudIoT paradigm. • A new CloudIoT paradigm, involving completely new applications, challenges and research problems.
2016	M. Diaz et al. [9]	• Internet of Things comprises many interconnected technologies like RFID and WSAN in order to exchange information.	• A examination of integration components: Cloud platforms, Cloud Infrastructures and IoT Middleware.
2017	Shivangi Vashi[10]	• Internet of Things (IoT) A Vision, Architectural Elements, and Security Issues	• on these securities of IoT devices strong encryption and authentication schemes are based on cryptographic need to design and new security protocols are required.
2018	Mauro Conti[14]	• Internet of Things Security and Forensics: Challenges and Opportunities.	• Major security and forensics issues along with potentially promising solutions.
2019	Mohammed El-hajj[15]	• survey of Internet of Things (IoT Authentication Schemes	• a large spectrum of authentication protocols/schemes leads to identify a number of requirements and open issues that should be taken into consideration

3. Internet of Things

Internet of Things is a network of devices that transmit share and use data from the physical environment to provide services to people, societies and societies. Object-objects work individually or in connection with other objects or individuals and have unique IDs. In addition, the Internet of Things has several applications in terms of health, transportation, environment, energy or types of devices: sensors used / transported (wearable) devices, p. clock, glasses, and home automation [11].

Today the world depends entirely on the information provided on the Internet, which is captured when taking photos or through text. This clearly specifies the greater participation of a human being in the collection of information. But the problem with human participation is that people have limited time and less precision, which leads to inappropriate and inconsistent data. Therefore, such a system is needed that can automatically acquire data and transfer it to the Internet without human-machine interaction.

The Internet of Things is a scenario in which all things are connected to the Internet through information collection devices for intelligent identification and management [12].

3.1. Internet of Things Architecture

Internet of Things covers the huge range technologies, due to this reason it is not promising to consider one single IoT Architecture as a reference architecture that can be used for all IoT operation. Therefore, the probability of having different reference architectures to be merge-up for creating required IoT architecture is very high, this means there is no standard architecture of IoT and different architectures are used according to the requirements. Architecture that provides easiness in deployment and makes the usage more desirable is considered to be an ideal architecture of IoT[16].
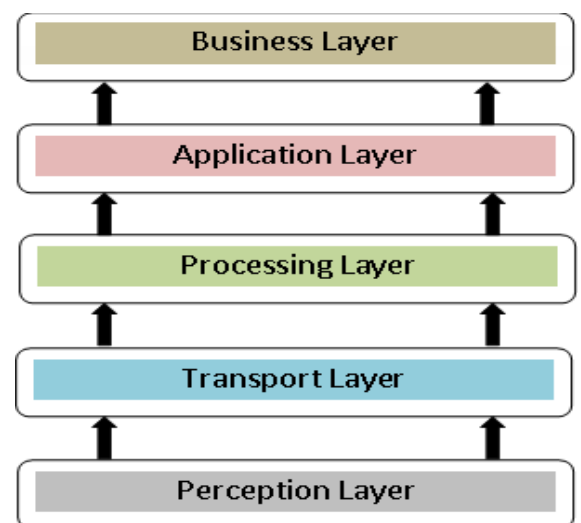
Figure 3. 5-Layered Architecture of IoT[17]

The IoT structure is divided into five levels as shown in Figure 3. These levels are:
1) Perception level: the perception level is also known as the "device level". It consists of physical objects and sensor devices. Sensors can be RFID, 2D barcodes or infrared sensors, depending on the object identification method. This layer basically deals with the identification and collection of specific information on the object by the sensor devices. Depending on the type of sensors, the information may relate to position, temperature, orientation, movement,

vibration, acceleration, humidity, airborne chemicals, etc. The collected information is passed to the network layer for secure transmission to information processing system [17].

2) Network level: the network level can also be called "transmission level". This layer securely transfers information from detection devices to the information processing system. The transmission medium can be wired or wireless and the technology can be 3G, UMTS, Wifi, Bluetooth, infrared, ZigBee, etc., depending on the sensor devices. Therefore, the Network layer transfers information from the Perception layer to the Middleware layer [17].

3) Middleware level: devices via IoT implement different types of services. Each device connects and communicates only with those other devices that implement the same type of service. This level is responsible for managing the service and has a link to the database. It receives information from the network layer and stores it in the database. It performs information processing and public processing and makes automatic decisions based on results.

4) Application level: this level provides global application management based on the information of the objects processed in the Middleware level. The applications implemented by the IoT can be smart health, smart agriculture, smart home, smart city, smart transport, etc [17].

5) Company level: this level is responsible for managing the general IoT system, including applications and services. Create business models, graphs, flowcharts, etc., based on data received from the application layer. The true success of IoT technology also depends on good business models. Based on the analysis of the results, this level will help determine future business actions and strategies [17].

4. Cloud based Computing

It is the outsourcing of archiving and data processing. Information hosted by a user resides in the global data center network rather than on a local server. It is a subscription service where the user has to pay monthly fees for the type of service environment he wants. Cloud computing allows users to access their files from remote locations and eliminates the hassle of buying expensive hardware for processing and storage [13]. Its main features are access to the large network (BNA), the allocation of resources and elasticity. BNA allows the user to access data from remote locations through standard platforms such as cell phones, laptops, etc. The resources are allocated dynamically based on the tenant's demand. Elasticity means that resources can be scaled up and down as needed [13].

4.1 Cloud computing features

Like all technologies, cloud computing technology has some characteristics that determine its function. These characteristics are analyzed and described below. Internet storage can be defined as a technological framework that uses Transmission Control Protocol / Internet Protocol (TCP / IP) networks to connect servers and storage devices and to facilitate the implementation of storage solutions. Internet storage technology is also known as Internet Protocol (SoIP) storage technology. By combining the best approaches in the storage and networking industry, SoIP offers scalable, high-performance IP storage solutions [18].

Internet service The main objective of Internet service is to strive to help customers around the world turn aspirations into results by exploiting the efficiency, speed and ubiquity of the Internet [18]. Internet applications Programs that can be written to do the work of a current manual task or practically anything and that perform their work on the server (cloud server) through an Internet connection instead of the traditional model of a program that needs to be installed and run on a local computer are the Applications in the Cloud, or as a scientific definition Applications on the Internet. Some examples of powerful programs executed in the cloud and which perform incredible IT exploits for the external user who only needs an Internet connection and a browser, are the applications of Google, Internet banking and facebook [18].

Energy efficiency, by definition, energy efficiency is a way of managing and limiting the growth of energy consumption. By providing multiple services for the same energy supply or for the same services for Less energy can be more energy efficient. For example, when a compact fluorescent bulb (CFL) uses less energy (1 / 3–1 / 5) than an incandescent bulb to produce the same amount of lights, compact fluorescent light (CFL) is considered more efficient from the point from an energetic point of view [18].

Computational Capacity Cloud computing services are leveraging ubiquitous computer-intensive mobile applications that have been enabled by Mobile Cloud Computing technology. Therefore, a system is considered computationally capable when it meets the requirements to provide us with the desired results, making the correct calculations [18].

5. Security Issues on IOT

The sheer size of the Internet of Things (IoT) exposes you not only to a variety of vulnerabilities, but also to different types of vulnerabilities / security concerns. Since the Internet is the underlying foundation of the IoT, Internet security problems also appear in the IoT. IoT has three main levels: the perception level, the transport level and the application level. Each level has its security concerns.

5.1 Security challenges in the main layers of IoT:

a) Perception Layer: The main process of the level of perception is to perceive and collect information. This is done through devices such as high temperature sensors, pressure sensors, RFID, bar codes, etc. The wireless nature of the signals makes this layer susceptible to the attacker who can disrupt the sensor node in IoT devices. The nodes generally operate in an external environment and this culminates in physical attacks on sensors and IoT devices in which an attacker can modify the hardware components of the device [19]. The collection of information or the perception of things occurs through a large number of terminals.

Another security concern is the intrinsic nature of the network topology which is dynamic since IoT nodes often move to different places. The level of perception of the IoT is mainly composed of sensors and RFID [20], therefore their storage capacity, energy consumption and computing capacity are very limited, which makes them sensitive to many types of threats and attacks [19]. By adding another node to the system, an attacker can send malicious data and threaten data integrity. This can cause DoS attacks, consuming the power of the nodes in the system and depriving them of the sleep mode that the nodes use to save energy [19]. These security problems can be treated with encryption; authentication, confidentiality and access control. They are detailed in the security measures section below.

b) Transport level: also called network level. The function of this level is to transmit the information collected from the level of perception to any particular information processing system through

existing communication networks such as the Internet, a mobile network [19] or any other reliable network. Since the information was transmitted to the Internet with the help of computers, wireless / wired networks and other components, this layer mainly consists of computers, wireless or wired networks. For this reason, they face security issues such as network content security, hacker intrusion and illegal authorization. The open IoT feature makes you face many identity authentication problems [21, 22].

c) Application level The main function of the application level is to analyze the information acquired by the transport level and process it intelligently. The application level is the main goal of IoT development and the smart environment is reached in this level. This layer guarantees authenticity, integrity and data privacy [19]. In this level we can obtain important information in real time.

6. IOT-based security solution

Wide distribution of IoT nodes and confidential nature of the data that IoT devices collect and transfer through important security problems. In this section, we will briefly analyze the main security solutions that exist in IoT environments

6.1. Encryption: Encryption is used to prevent data manipulation and to maintain the confidentiality and reliability of the data. Encryption can be accomplished in two ways: from node to node, i.e. jump-to-hop encryption or end-to-end encryption. Network-layer is used for node-to-node encryption process. It provides the conversion of encrypted text on each node to make it more secure for the network layer. On the other hand, end-to-end encryption is performed at the application level. Encryption-decryption is performed only at the sender-recipient end. What the sender encrypts is decrypted only at the end of the reception. Data encryption is a vital means of protecting data. The encryption function is to prevent the decryption of information when it is intercepted by attackers.

6.2. Confidentiality: it is very important that the data is safe and accessible only to authorized users. The user can be human, other IoT and cloud computing devices or external devices (i.e. devices that are not part of the network). It is important to ensure that sensors in a particular node do not allow neighboring nodes to access the collected data. Confidential information should not be filtered to any unauthorized reader using an electronic RFID tag.

6.3. Authentication: the information received from a reader must be remarkable whether sent by an authenticated electronic label or not. Authentication is important in every IoT level. In the perception level, the sensor nodes must be initially authenticated to avoid DoS attacks. Likewise, authentication on every level is required as a crucial security measure.

7. Conclusion :

The research paper discusses the survey and analysis of the current state and concerns of the Internet of Things (IoT) and the security of cloud computing, we also explain the security problems at each level and their measures that help us understand and improve Security IoT architecture. The IoT framework aims to connect anyone with anything anywhere. IoT generally has a three-tier architecture consisting of perception, network and application levels. A set of security principles must be applied at each level to achieve secure IoT implementation. The future of the IoT framework can only be guaranteed if the associated security problems are solved and resolved. Because security is always a big problem in all systems, but in the cloud-based IoT it is the most important area in which we must work to protect the data or information present in a connected network.

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Geochemical Modeling of High Fluoride Concentration in Groundwater using PHREEQC – A review

Meena Chakraborty

Govt. Naveen College Bori, Durg

Email id: chakrabortymeena@gmail.com

Abstract: *Fluoride in drinking water is good for dental health when it is present in small amount i.e. less than 1.5 mg/L. As fluoride concentration becomes more than this limit, it causes dental and skeletal fluorosis. Groundwater is the major source of drinking water in India. Fluoride concentration in ground water increases due to geochemical reactions. The use of geochemical model helps in understanding the geochemistry of an area where fluoride concentration in ground water is high. This paper focuses on use of PHREEQC geochemical modelling of high fluoride concentration in groundwater. PHREEQC programme will calculate the saturation indices (SI) for all the possible minerals in the database. SI indicates thermodynamic possibility of reactions, dissolution of minerals and precipitation in an aquifer system. This information is helpful in identifying cause of high fluoride concentration in aquifer, which further helps us in mitigation measures.*

Keywords: *Fluoride, groundwater, PHREEQC, saturation indices.*

1. Introduction:

Water is the most wonderful gift of nature for human beings. Without water life is not possible. But geochemical reactions and anthropogenic activities both are responsible for detoriation of water quality and make it unfit for domestic, industrial and agriculture processes. Groundwater is one of the major sources of drinking water in India as well as in many parts of the world. Presence of various hazardous contaminants such as fluoride, arsenic, nitrate, pesticides, heavy metals etc. in groundwater has made it unfit for drinking purpose. Out of these contaminants, fluoride has drawn special attention by scientist all over the world because of its adverse effect on human life in the form of fluorosis. The permissible limit of fluoride in drinking water is 1.5 mg/L as prescribed by World Health Organization (WHO, 1984). But when the concentration of fluoride in drinking water becomes more than this limit, it causes dental and skeletal fluorosis (Muralidharan et al., 2002; Subba Rao, 2009; Susheela, 1999). High fluoride concentration has been reported in many parts of twomost populous countries of the world India and China (Dhiman and Keshari, 2003; Jacks et al., 2000; Jethra, 1998, Jha and Jha, 1982; Keshari and Dhiman, 2001, Zan-dao and Yan, 2002). Concentration of fluoride in ground water increases when it comes in contact with rocks which are enriched with fluoride containing minerals like fluorite, apatite, fluorapatite, mica etc.Some important factors such as alkaline pH, high temperature, long residence time, anion exchange capacity of aquifer materials also helps in increasing fluoride concentration in groundwater.

Ground water may undergo many inorganic reactions such as precipitation / dissolution, oxidation / reduction, hydrolysis, sorption and desorption, dissolution of gases etc. Recently, various geochemical codes have been developed to model the water rock interactions. These codes can be used for mass balance, equilibrium speciation / saturation and equilibrium mass transfer modeling. These codes include PHREEQC, MINTEQA2, WATEQ, BALANCE, NETPATH, EQ3NR, MINEQL and HYDROGEOCHEM. With the help of these models, one can calculate saturation index that can identify the equilibrium state of minerals. Speciation modeling provides saturation indices to determine whether the reactions are thermodynamically possible or not, which minerals may be dissolving and which may be precipitating in an aquifer system (Satapathy and Panigrahi, 2011). PHREEQC geochemical code is used for speciation modeling for the high fluoride groundwaters, which provides information regarding factors responsible for elevated concentration of fluoride in water. By knowing the source and causes of high fluoride concentration in water, suitable strategies can be adopted for mitigation measures.This paper focuses on use of PHREEQC for modelling of high fluoride groundwater.

2. Fluoride chemistry of groundwater:

Geogenic processes are responsible for presence of fluoride in groundwater. This processes also govern fluoride concentration and status. Igneous, sedimentary, and metamorphic rocks have fluoride in them (Frencken 1992). When groundwater comes in contact of these rocks in aquifers, it dissolves fluoride-bearing minerals such as fluorite, biotite, topaz, fluorspar, fluorapatite, amphiboles(Abdelgawad et al. 2009; Chae et al. 2007; Rao and Devadas 2003). The main factors whichaffect the dissolution of fluoride are temperature, pH, complex ions and colloid

presence, CO_2, solubility of fluoride-bearing minerals, reaction time between water and rock, and the size and type of the geological formations traversed by water (Apambire et al. 1997; Jacks et al. 2005). Moreover, CO_2 supplied by magma degassing, metamorphic devolatilization, and interaction with sedimentary carbonates also significantly affects the geochemical properties of groundwater and the concentration and status of fluoride (Cartwright et al. 2002; Choi et al. 2005; Fouillac 1983; Marques et al. 2006; Mayo and Muller 1997).

The fluorite solubility increases with temperature and varies in different aqueous solutions. The order of fluoride concentration in different types of aqueous solution is as follows: Na-HCO_3>Na–(SO_4)–Cl>Ca–(SO_4)–Cl. The fluoride concentration in calcite-bearing aquifer systems is lower than in non-calcite mineral aquifer systems. The fluoride speciation was also pH-dependent. In acidic solution, HF is the dominant species. With increasing pH increasing, free fluoride becomes dominant, when pH>6, 90 % of the total fluoride is the free fluoride ion.

The CO_2 contribution depends on the solution composition and the aquifer minerals. In non-bicarbonate and non-calcite mineral aquifer systems CO_2 partial pressure helps in dissolution of fluorite by reducing the pH and shifting the composition of the water towards NaHCO3 type. However, in bicarbonate-bearing aqueous solution, an increase in the CO_2 partial pressure suppresses bicarbonate dissociation. In calcite-bearing aquifer systems, increasing CO_2 partial pressure facilitates calcite dissolution, which increases the calcium concentration in the aqueous solution and suppresses fluorite dissolution.

3. Use of PHREEQC for groundwater modelling:

PHREEQC is a computer program written in the C programming language. Parkhurst and Appelo (1999) developed this geochemical code. It is designed to perform a wide variety of low temperature aqueous geochemical calculations. PHREEQC is based on an ion-association aqueous model which can be used for speciation and saturation-index calculations;Batch-reaction and one-dimensional transport calculations involving reversible and irreversible reactions andinverse modelling, which finds sets of mineral and gas mole transfers.

The saturation index (SI) of a mineral is calculated by following euation (1) (Appelo and Postma 1999).

SI = log(IAP/KSP)   …………………….. (1)

where IAP is the ion activity product of the dissociated chemical species in the aqueous media and KSP is the equilibrium solubility product for the chemical involved at the sample temperature. If saturation index is zero, then it indicates that the solution is saturated with respect to a specific mineral; if below zero, it suggests undersaturated; and if above zero, it specifies an oversaturated state.

4. Comparison of results of some fluoridated areas analysed by PHREEQC:

Tirupattur region in Vellore district of Tamil Nadu in India

Tirupattur is a semi-arid region characterized by hard rocks, located between East longitude (78°20′00–78°48′00) and North latitude (12°1500–12°4200) in Vellore district. Ten groundwater samples were collected from this area during June 2010. Fluoride concentration in water samples was determined using SPADNS method (APHA et al., 1995).Fluoride concentration in groundwater ranges from 0.26 to 2.75 mg/L in this area (Table 1).Higher concentration of Na, HCO_3^- and CO_3^{2-} has a positive effect on fluoride enrichment. Whereas, Ca has negative effect due to the precipitation of F as CaF_2(Table 2).Analysis of lithology suggests that the study area comprises mainly of igneous andmetamorphic rocks. Ca, HCO_3^-andCO$_3^{2-}$ is accounting to silicate weathering under the influence of H_2CO_3 (Subbarao, 2011) which liberate HCO_3^-which will then react with the fluorite (CaF_2) and mobilize the F− ions (Sajil Kumar et al., 2015):

By using PHREEQC, a mineral speciation modelingwas performed with the available hydrochemical parameters. Saturation indices (SI)showed that the samples of this areawere found over saturated with calcite and dolomite. It indicates a subsequent precipitation of these minerals and retardation of Ca and Mg concentrations in the groundwater. However, fluorite, gypsum and halite revealed a negative SI value. This shows that groundwater can dissolve more fluoride, sulfate and sodium under the observed field conditions. Na/Ca greater than 1 will act as a triggering factor of F-enrichment. Undersaturated halite in all the groundwater samples indicates more dissolution of Na and subsequent increase in F concentration in groundwater.In this area groundwater is alkaline pH (8–8.8), and rich in Na and HCO_3 and poor in Ca. Thishydrogeochemistry seems to be as favorable for the dissolution of F richminerals in the study area.

Mehsana District in Gujarat in India

Mehsana District in Gujarat State (as per administrative boundaries, 1980) is located in the western part of India between 23°02–24°09N and 71°26–72°51E.The geological setup for the district shows thick alluvium almost throughout the study area, and the Ajabgarhmetasedimentary rocks occupy a small area in the north-eastern portion. Groundwater quality monitoring was carried out for 21 well locations in the study area during June and October 2002. Fluorideconcentration was determined by spectrophotometer (APHA, 2000). The fluoride concentration ranges between 0.14 and 5.6 mg/ L (Table 1). Correlation studies showed that fluoride has a negative relationship with calcium, magnesium, nitrate and pH andpositive relationship with sodium, potassium, bicarbonate alkalinity, sulphate, chloride and EC (Table 2). High fluoride concentration occurs in sodium-bicarbonate waters. In this area, solubility of calcium- and fluoride- containing minerals controls the fluoride concentration. High fluoride with very low calcium and magnesium in water may be due to prior precipitation of $CaCO_3$ from water and only limited incorporation of fluoride in the calcite structure, so that there is always a net balance of fluoride in the solution, as suggested by Rao*et al*. (1993).

Aqueous speciation modelling was carried out using PHREEQC (Parkhurst&Appelo, 1999) geochemical code. The saturation indices shows that the groundwater is oversaturated with calcite, having a saturation index of 0.06–1.74 with equilibrium state. The groundwater is undersaturated with fluorite, having a saturation index of 0.03 to –4.87.

Tamiraparani river basin in Tamil Nadu in South India

The Tamiraparani basin is located in the southern peninsular India covering the Tirunelveli and Tuticorin districts of Tamil Nadu. The study area extends between $77^010'$–$78^010'$E longitudes and $8^030'$–$9^015'$N latitudes. The Tamiraparani basin is most underlain by crystalline basement rocks of Archean age, which consist of gneisses, charnockites, granites, and basic and acidic intrusive rocks (Pitchamuthu 1979; Narayanaswami and Lakshmi 1967). A total of 124 groundwater samples were analyzed for their fluoride content. The fluoride concentration in the study area varied from 0.01 to 1.67 mg/L(Table 1). The groundwater in the study area belongs to Ca–Mg–Cl–SO_4 and Ca–Mg–HCO_3 types. A positive correlation between fluoride and TDS, Na+, K+ and HCO_3^- indicates its geogenic origin(Table 2), and positive loading between pH and fluoride is an indication that alkaline environment boosts the dissolution of fluoridebearing minerals into the groundwater.

Mineral saturation indices for fluorite were estimated using PHREEQC (Parkhurst and Appelo 1999). High fluoride concentrations were found to be associated with Ca–HCO_3 and mixed Ca–Mg–Cl types of water. Concentration of fluoride ranged from 0.01 to 1.67 mg/L in this region. A significant positive correlation between F- and HCO_3^- justifies the occurrence of calcite and fluorite minerals and its interaction with groundwater. Moreover alkaline pH condition favours the dissolution of fluoride into the groundwater.

Qinkenpao area in Daqing in China

The groundwater is undersaturated with fluorite, having a saturation index of - 0.0453 to -2.1392, which indicates its dissolution. Fluoride concentrationsranges between 0.58 to 3.4 mg/L in groundwater in large parts of the Qinkenpao area, Daqing, China (Table 1).This is a matter of great concern for drinking water supply since it exceeds the maximum permissible fluoride concentration of 1.5 mg/L.

Aqueous speciation modeling was carried out using PHREEQC (Parkhurst and Appelo, 1999) geochemical code via AquaChem 5.1 (Waterloo Hydrogeologic Inc., 2009). The saturation indices of fluorite were computed for allhydrochemical data. Fluoride has a positive relationship with all species, except pH.PHREEQC analysis showed that the groundwater is undersaturated with calcite, having a saturation index of -0.0024 to -0.6174 with an equilibrium state. This causes dissolution of calcite which in turn causes a pH increase due to consumption of H+ by carbonate during the dissolution process. The decrease in the CO_2 in the solution leads to the dissolution of calcite and dolomite and thereby increasing the magnesium and calcium concentration in the solution

Yuncheng Basin in North China

The Yuncheng Basin, which is located in North China, has severely fluoride-polluted groundwater and has complicated hydrogeochemical conditions(Gao et al., 2015; Gao et al., 2018;Currell et al.,2010; Currell et al.,2011; Gao et al., 2007;Li et al., 2016). The basin consists of several aquifers and contains mainly thick, loose, Quaternary sediment rich in pores. The sediment consists of mainly fine to coarse sand, gravel, pebbles, silt and clay.42 deep-aquifer samples, were collected from different areas of the Yuncheng Basin during August, 2013-September, 2015.

Geochemical modeling and calculation of the saturation index (SI) of the minerals and fluoride species were performed with PHREEQC software. The results showed that an increase in the Na/Ca molar ration increasesfluoride in solution(Table 1).

.Table 1: Use of PHREEQC in analysis of fluoride in groundwater

Country	Study Area	Fluoride concentration (mg/L)	Correlation of F⁻ with other parameters		PHREEQC	Inference	Reference
			+	-			
India	Tirupattur region in Vellore district of Tamil Nadu	0.26 – 2.75	TDS, Na, HCO_3 and CO_3, pH, conductivity	Ca and K.	Mineral speciation modeling	SI calculated showed that samples were over saturated with calcite and dolomite and undersaturated halite which increases fluoride conc. in water	Sajil Kumar et al., 2015
India	Mehsana District in Gujarat	0.14 - 5.6	Na, K, Cl^-, HCO_3^-, SO_4^{2-}, EC	Ca, Mg, NO_3^-, pH	Mineral speciation modeling	Groundwater is oversaturated with calcite andundersaturated with fluorite.	Dhiman & Keshari, 2006
India	Tamiraparani river basin	0.01 - 1.67	TDS,Na, K, HCO_3^-	-	Mineral speciation modeling	High fluoride concentrations were found to be associated with Ca–HCO_3 and mixed Ca–Mg–Cl types of water and alkaline pH helps in dissolution of fluoride in groundwater.	Magesh et al., 2016
China	Qinkenpao area in Daqing	0.58 - 3.4	Ca, Mg, Na, HCO_3^-, SO_4^{2-}	pH	Mineral speciation modeling	Speciation modelingshowed that the groundwater is undersaturated with calcite and fluorite	Mingzhu Liu et al., 2014
China	Yuncheng Basin	0.1-3.15	-	-	Mineral speciation modeling	Increase in the Na/Ca molar ratio increases fluoride in the solution	Luo et al., 2018

Table 2: Physicochemical analysis of water samples

Study area	No. of samples	pH	Ca	Mg	Na	K	CO_3	HCO_3	Cl^-	F^-	SO_4^{2-}	Water type	Reference
Tirupattur	10	8.0-8.8	12-98	31-81	53-396	4 – 30	0-135	191-414	85-241	0.26-2.75	56-346	Na–HCO_3–Cl–CO_3	Sajil Kumar et al., 2015
Mehsana	21	7.1-8.6	12-152	0.32-15.4	1.7-13.	0.04-	0.0-1.6	4.42-15.73	1.4-3.9	0.14-5.6	0.13-8.54	Na-HCO_3	Dhiman&

					4	0.56		7			, Ca-HCO3 and Mg-HCO3.	Keshari, 2006
Tamiraparani river basin		6.45 - 8.8	28.05-385.72	4.572-144.53	10 - 198	1-7	-	92 - 512.9	49.05 - 1215.6	0.01-1.67	3-410	Ca–Mg–Cl–SO4 and Ca–Mg–HCO3	Magesh et al., 2016
Qinkenpao	17	7.26 - 9.75	6.25 - 193.5	9.58-49.53	39.15 - 451.12	0.03-3.2	-	157.77 - 717.41	11.51-315.25	0.58 and 3.4	0.0 - 190.80	Na-HCO3, Ca-HCO3 and Ca-NO3.	Mingzhu Liu et al., 2014
Yuncheng Basin	42	7.3-8.6	8.21-268.5	10.92-470.4	16.5-1074	0.971-10.05	-	66.4-830.9	6.73-1,402	0.1-3.15	17.51-2,106	Na-HCO3, Ca-HCO3	Luo et al., 2018

Note: EC expressed in µS/cm and major ions expressed in mg/L and pH has no unit.

5. Conclusion:

Study of geochemical codes has a unique place in environmental chemistry as it can help to identify the source of pollutant in environment. It is used for mass balance, equilibrium speciation / saturation index and equilibrium mass transfer modeling. The thermodynamic properties of aqueous solutions and saturation indices of minerals can be calculated using speciation models. PHREEQC geochemical code is used for speciation modeling for the high fluoride groundwaters. Saturation index calculation results show that the groundwaters are oversaturated orundersaturated with which mineral in affected area, and this information in turn helps to identify the source of fluoride in groundwater in those affected areas. This helps scientist and health workers in providing mitigation measures to population in areas where groundwater has high concentration of fluoride.

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INFLUENCE OF EXTRACTION METHOD ON CITRIC ACID& NUTRITIONAL BENEFITS OF CITRUS FRUITS IN BHILAIAREA (490006), DISTRICT- DURG, CHHATTISHGARH

Ms. Sujata
Assistant professor, Department of Chemistry, Sai College Sector-6, Bhilai, Chhattisgarh, India
Raosujata665@gmail.com

ABSTRACT: *Citric acid is present in a lot of fruits and vegetables but they have the highest concentration in citrus fruits. This high concentration of the citric acid is responsible for the sourness of fruits such as lemon, grapes, and gooseberries etc. The major use of citric acid is as a flavoring agent and pH balancing in fruits and drinks. Citric acid was historically produced extracting it from fruits. But nowadays, it produced from a fungus, in the presence of the carbohydrates; fungus was efficiently and clearly produced citric acid. In present study these citrus fruits play a vital role in the human health. There are benefits to consuming foods that contain naturally occurring citric acid because it acts as antioxidants.*

We evaluated the citric acid concentration of citrus fruit juice. Therefore care must be exercised by destabilizing the acidic environment often caused by too many processed foods. The present review describes about chemical characteristics of lemon, need of amount of citric acid in human body & the diseases you suffer from taking more of it. Citric acid had been extracted in order to configure out the level of Gastro intestinal absorption of citric acid from dietary sources and its effect in the urinary citrate excretion to the living life.

KEYWORDS: *flavoring agent, pH, extraction, anti-oxidants, concentration, citric acid, etc.*

INTRODUCTION:

Citric acid, (IUPAC name:2-hydroxy-1,2,3-propanetricarboxylic acid is a weak tricarboxylic acid that is not concentrated in citrus fruits physiologic blood to a lesser extent in urine, it exists mainly as the trivalent anion .Citric acid is frequently used as additive to provide acidity and sour taste to foods and beverages. Citrates salts of various metals are used to deliver minerals in biologically available forms e.g. include dietary supplements and medication [1]. Among fruits, citric acid is most concentrated lemons and limes and rather than orange, grapes, gooseberries comprising as 8% of the dry fruits. Gastro intestinal absorption of citric acid from dietary sources has been associated with an increase in urinary citrate excretion. Citric acid was extracted by the method of isolation of citrus fruit Lemon, which is beneficial for so many diseases like kidney stones, osteoporosis, an acidity regulator, etc. In case, human body consumed or used in excess quantity of citric acid then, it can cause diarrhea, vomiting, nausea, irritation, etc. [2]

Fig1: Formula of Citric Acid   **Fig2: Citric Acid Crystals**
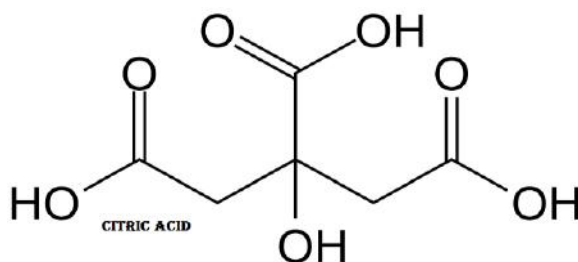
The lemon citrus Limon (Latin word) osbeek is a species of small evergreen tree in the flavoring plant family Rutaceae, native to Asia.Binomial Name: Citrus Limon (L.) Osbeek[3]

The trees Ellipsoidal yellow fruit is used for culinary and non-culinary purposes throughout the world, for its juice, which has both culinary and cleaning uses.

SAMPLE COLLECTION:

Lemon was harvested from the garden in our home& some were purchased from the local market of Bhilai Area in a polythene bag. Lemon juice was squeezed at home with a squeezer & collected in a 250 ml bottle of coke, ready for isolation.

Fig 2: collection of sample   **Fig 2.1: Squeezing the juice**

Fig 2.2: Squeezing the juice   **Fig 2.3: Measurement of juice**

METHODOLOGY:

Take the respective volume of Lemon juice in the beaker, noted the pH value with the pH paper which is 1.8 & is confirms the acidity level present in citrus juice. Neutralize the citrus juice with NaOH (sodium Hydroxide). After neutralization, pH is 8.36, gets precipitation of Sodium Citrate, filter the solution. In precipitate add the solution of $CaCl_2$ (Calcium Chloride) & boil it, again get precipitate which is known as Calcium Citrate, in this add dilute H_2SO_4 (Sulphuric Acid), filter it, collect the filtrate & boil it above high temperature, get the Citric Acid solution. Store this solution for some weeks at room temperature which get converted into crystals of Citric Acid, left overnight & get dry. After getting crystals of Citric Acid, determine the melting point of respective crystals is 162°C by the help of melting point apparatus & the wavelength range of citric acid crystals is 293 nm at 25°C by the help of spectrophotometer.

Fig 3: Juice after neutralization

Fig 3.1: Making of Calcium citrate
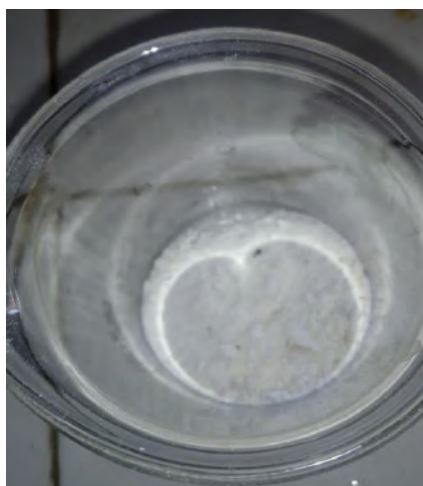
Fig 3.2: Calcium citrate

Fig 3.3: Citric Acid crystals

RESULTS & DISCUSSIONS:

Table 1.1: Parameters of Citrus fruit juice (Lemon):-

Type of citrus fruit	Volume of juice	Mass of juice	Actual pH	Experimental pH	pH after neutralization
Lemon juice	213 ml	250 gm.	1.2-2.2	1.8	8.36

Table 1.2: Parameters of Citrus fruit juice (lemon):-

Type of citrus fruit	Weight of calcium citrate	Volume of H_2SO_4	Actual melting point	Experimental melting point	Citric acid content	Actual range of citric acid	Experimental range of citric acid
Lemon juice	8 gm.	2.17 ml	156˚C	162˚C	2.6 gm.	190-280 nm	293nm

The medical management of calcium urolithiasis depends on manipulating the balance of crystal promoters versus inhibitors. Nutrition therapy that is targeted to an individual patient's risk factors is a basic strategy for kidney stone preventions and an appropriate adjunct to pharmacologic therapy. A cornerstone of prevention is achieving appropriate urinedilution by enhancing urine volume. This reduces the super saturation of urine, a necessary first step in crystal formation [4].

A second goal in preventing calcium stone formation is to enhance the concentration of crystal inhibitors. Of these, citrate is the most clinically significant, as it may be manipulated by either diet or pharmacologic therapy or a combination thereof [5].

Lemon juice from the fresh fruit & from juice concentrates, provide more citric acid than ready to consume all citrus juices which is squeezed from the fruit. Ingestion of lemon or tangerine juice on a daily basis could provide dietary alkali that would decrease renal tubular reabsorption of citrate, resulting in enhanced urinary citrate excretion [6]. The distribution of lemon juice in ample water or other fluid, consumed throughout the day, would also add to the volume of fluids ingested, resulting in enhanced urine output & reduced urine super saturations.

Further Research should determine the bioavailability of dietary citric acid from various sources & characterize theresponse to dietary citric acid in kidney stone formers who are hypocitraturia, as well as those who are normocitraturic [7]. The impact of diet derived citrate on urinary concentrations among calcium stone formers consuming different diets (e.g., high fruits/vegetables intake versus low fruits/vegetables intake; high meat intake versus low meat intake) should be assessed, as dietary patterns are known to influence urinary citrate concentrations.

CONCLUSION:

Lemon juice from the fresh fruit & from juice concentrates, provide more citric acid then ready to consume lemon juice which IS squeezed from the fruit. Ready to consume lemonade formulations & those requiring mixing with water contain ≤6 times the citric acid, on an ounce for ounce basis, of lemon & lime juice.Citric acid content of beverages may be useful in nutrition therapy for calcium citrate urolithiasis, especially among patients with hypocitraturia. Citrate is a naturally occurring inhibitor of urinary crystallization, achieving therapeutic urinary citrate concentration is one clinical target in the medical management of calcium urolithiasis .When provided as fluids beverages containing citric acid add to the total volume of urine, reducing its saturation of calcium and other crystals, and may enhance urinary citrate excretion. Information on the citric acid content of fruit juices and commercially available formulations is not widely known.

Hence, we conclude that the fresh gooseberries juice has the highest citric acid content.

Order of citric acid content is:-
• Freshly squeezed lemon juice.

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Disease caused by microorganism due to contaminated water and their precautions: A Review

NIKITA MISHRA
Sai Mahavidyalaya, Bhilai , Department of Biotechnology
E mail – nikitamishra150@gmail.com

Abstract: Water is necessary for all living organisms but due to some unwanted things water is getting contaminated and this life giving liquid is snatching life. Now a days human are facing many water borne diseases humans use water in various ways such as in bath washing drinking cleaning food making at cetera but the water they are using is not necessarily clean it can also be contaminated. Contaminated water has a lot of microorganism like bacteria, protozoa, virus, parasitic, worms etc. this microbes for organisms enter the body through the oral or skin and cause diseases such as Cholera dysentery typhoid hepatitis A,E ,dracunculiasis etc. Sometimes this diseases can cause death due to some symptoms we can identify and treat the diseases we should adapt some precautions also to avoid this dangerous diseases in this review different microbial agents their name diseases route of transmission and symptoms, precautions are listed.
Keyword: contaminated, diseases, microbes, symptoms, precautions.

Introduction:

Earth is full of natural resources such as air ,water ,wood ,natural gas and one of the most important resources water in our daily life.Water is used everywhere ,50 to 75% of human body is made up of water. Water has lots of health benefits it moisturizers skin, carries oxygen which is useful for cell, used in flush out waste, it helps in weight loss. Water contains minerals which are beneficial for joints and other body organs. There are many types of pollution in the new Era different and dangerous pollutants are produced due to which all the natural resources are getting polluted water is being and terminated due to human faecesand other pollutants due to this contamination water contains different types of bacteria like *(vibrio cholera,Escherichia coli ,campylobacter, salmonella)* , viruses (rotavirus, norovirus etc. protozoa (cryptosporidium, giardia) , worms like Guinea worm etc. which can cause dangerous diseases and cause death.This disease show some symptoms like abdominal cramps, watery faeces, vomiting ,nausea, fever, weakness ,rash with small red dots ,weight loss etc.thesediseases can be treated by identifying these symptoms.

Contaminated water, microbes& diseases

Contamination means unwanted matters. When unwanted particles mix with natural resources then they can be harmful for humans and when contaminants are found in water then that water is called contaminated water.Water is contaminated due to various reasons such as sewage,faeces, urine , dirty water released from factories and this contaminants, contaminate water resources like river ,pond, sea etc. This resources are contaminated due to human activities.

Microbes means that organisms which we cannot see with naked eye. microorganismproduced due to contamination in waterthis pathogenic microorganisms transmitted diseases and this pathogens can cause sometimes death. Diseases caused by different parasite/microorganism in contaminated water or untreated water. Water borne diseases like Amoebiasis, dysentery, cholera, typhoid etc. Can be spread by drinking, bathing, washing etc. maximum peoples are dying due to contaminated water.

Table- list of different waterborne microbes which cause disease, their root of infection, symptoms and precautions:

Microorganisms	Name of microbes	Causing Diseases	Route of transmission	Symptoms	Precautions
Bacteria	*Escherichia coli*	Diarrhoea	Direct contact, Oral	Vomiting , bloody diarrhoea	Wash hand thoroughly, avoid drinking contaminated water
Bacteria	*Vibrio cholerae*	, Cholera	Oral	Diarrhoea , loose motion, fever , weakness	Do not drink contaminated water , should use boiled water , should wash hand properly

Bacteria	*Legionella*	Pneumonia ,some respiratory infection	Oral , ingestion	Cough , fever , shortness of breath , weakness	Should we drink warm water , personal hygiene should be proper
Bacteria	*Yersinia enterocolitica*	Diarrhoea	Oral , direct or indirect interact with animals	Diarrhoea, vomiting, low grade fever	Drink treated water , follow good hand washing
Bacteria	*Salmonellatyphi*	Typhoid	Oral ,	Fever , headache, stomach pain , weakness	Wash hand properly , drink boiled water
Bacteria	*Shigella*	Shigellosis	Oral route contact with contaminated faecal , direct person to person	Abdomen cramping , nausea , vomiting	By washing hand, good personal hygiene , avoid close personal contact with infected Shigella
Bacteria	*Campylobacter*	Campylobacteriosis	Ingestion , contact with infected person , diarrhoea , dysentery	Bloody diarrhoea , cramps fever , headache, muscle pain , nausea , vomiting	Byeating uncooked food , avoid contaminatedwater wash hands properly
Virus	Echovirus	Gastroenteritis	Faecal , oral person to person	Cough , sore throat , flu	General cleanliness practice avoid contaminated water
Virus	Polio virus	Polio	Oral , faecal oral	Fatigue , fever , paralysis	Polio vaccine needs to be given to children important to practice good personal hygiene
Virus	Adenovirus	Gastroenteritis, respiratorydisease conjunctivitis	Faecal- oral	Inflammation of stomach , diarrhoea , vomiting, nausea	Wash and properly , drinking lukewarm water
Virus	Reovirus	Gastroenteritis	Oral – faecal	Fever, vomiting, diarrhoea, dehydration	Avoid to take contaminated water , wash hand properly
Virus	Rotavirus	Gastroenteritis	Oral – faecal	Fever, vomiting ,diarrhoea , dehydration	Avoid to take contaminated water
Virus	Torovirus	Gastroenteritis	Oral – faecal	Vomiting , bloody diarrhoea	Can be controlled by good bio security
Virus	Hepatitis A & E	Hepatitis , jaundice	Oral	Nausea , acute liver failure	Wash and properly and avoid to take contaminated water
Virus	Coxsackie virus	Respiratory disease	Oral	Nasal secretion or throat disorder fever loss of appetite	Keeping strict hygiene precaution , hand washing
Virus	Noro virus	Gastroenteritis	Faecal– oral route	Vomiting,diarrhoea, stomach ache	Hand thoroughly with soap avoid contaminated

					water
Virus	Astro virus	Gastroenteritis	Faecal– oral route	Diarrhoea , nausea vomiting , stomach ache	Hygiene , washing hands , avoid close contact with infected person
Protozoa	Entamoeba histolytica	Amoebiasis	Faecal - oral	Diarrhoea , loss of vision , weakness	Improved sanitation drinking clean water
Protozoa	Giardia lamblia	Giardiasis	faecal - oral	Diarrhoea	Avoid to take contaminated water , wash hand properly
Protozoa	Cryptosporidium	Cryptosporidiosis	Faecal – oral	Dehydration , lack of appetite	Wash and properly , practice good hygiene
Protozoa	Isospora belli	Isosporiasis	Faecal – oral	Fever, vomiting, diarrhoea, abdominal pain	Should drink clean and lukewarm water person hygiene practice
Helminths	Ascaris lumbricoides	Ascariasis	Swallowed ingestion	Coughing wheezing aspiration pneumonia blood in mucus	Wash hand with soap drinking clean water
Helminths	Taenia saginata	Taeniasis	Ingestion - oral	Constipation , headache , abdominal pain	Drink treated water , washing hand

Conclusion:

water is one of the most essential liquid when the central liquid got contaminated then several disease born through different virus like protozoa bacteria helmets by identifying symptoms human can cure different disease like polio, typhoid, diarrhoea , dysentery, pneumoniaby practicing good personal hygiene , taking boiled water , by washing hands properly after toilet and before taking meal , should drink treated water and avoid contaminated water.

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IMPACT OF FLUORIDE ON GLUCOSE AND ITS RECOVERY BY MELATONIN IN CAT FISH (HETEROPNEUSTES FOSSILIS)

Dr. PUSHPA SHARMA
ASSISTANT PROFESSOR, ZOOLOGY
SAI MAHAVIDYALAYA, BHILAI, INDIA
pushpa.sharma73@gmail.com

***ABSTRACT:** Intake of fluoride either through skin, inhalation or ingestion causes damage to physiological activities of the cell, present study deals with the effect of fluoride on glucose during reproductive phases (pre-spawning, spawning and post-spawning) in Heteropneustesfossilis. Blood is an overall reflector of body's health and its assessment is useful in the detection and diagnosis of metabolic disturbances and diseases processes. Three experimental sets (control (C1), fluoride-2.5mg/L water (C2) and fluoride-2.5mg/L water with melatonin 2µg/fish/day(C3)) each with four fishes were maintained for 15 days and after that recovery (R1, R2 & R3) was measured. In pre-spawning phase results for exposure of fluoride alteration in glucose C1 & C2, C2 & C3 , C1 & C3 are (P=0.96<2.45), (P=0.75<2.45) & (P=1.72<2.45) at 5% P was non-significantly decreased and in recovery same result was found. In spawning phase results for fluoride exposure alteration in glucose C1 & C2, C1 & C3 (P=3.52>2.45), (P=3.38>2.45) at 5% P was reported significantly decreased but in C2 & C3 (P=0.07<2.45) at 5% P was non-significantly decreased and in recovery R1 & R2 (P=4.26>2.45) significant but R2 & R3 (P=1.07<2.45) and R1 & R3 (P=1.83<2.45) at 5% P non-significant was found. In post-spawning phase results for exposure of fluoride alteration in glucose C1 & C2, C1 & C3 (P=3.97>2.45), (P=4.05>2.45) at 5% P was found significantly decreased but in C2 & C3 (P=1.24<2.45) at 5% P was non-significantly decreased and in recovery R1 & R2 (P=5.91>2.45), R2 & R3 (P=2.66>2.45) and R1 & R3 (P=6.71>2.45) at 5% P all significantly decreased. Results obtained revealed that fluoride has toxic effect on both human as well as animals.*

***KEYWORDS:** Inhalation, Glucose, Alteration, Melatonin.*

1. Introduction:

Pollution is a major environmental problem and heavy metal pollution of water is a major threat facing the modern world (Dushenkov*et al.,* 1995). Water polluted with heavy metals causes destruction of aquatic species indirectly by breaking the food chain or directly by affecting the aquatic life. Morphology and physiology of aquatic animals are affected by heavy metals that enter into aquatic habitats by a number of routes and cause lethal effect. Heavy metals are stable compounds and are not readily removed by oxidation, precipitation or other process and affect the activity in animal which are exposed to heavy metals (Pamila, 1991). Fluoride ions have been considered as enzymatic poison, inhibiting enzyme activities and ultimately interrupting metabolic process (FCDSW, 1984).

Luke 2001, found that the pineal gland is a very small gland in the center of the brain, responsible for a large range of regulating activities which produces serotonin and melatonin which are calcifying tissue, like the teeth and the bones, she hypothesized that it would concentrate fluoride to a very high levels. The gland is not protected by the blood brain barrier and has very high perfusion rate of blood, second only to the kidney. Melatonin has been engrossed in the regulation of various kinds of behaviour in lower vertebrates. It influences the shoaling behaviour in gold fish (Kavaliers, 1989). Application of melatonin causes an increase in cleaning behavior of the fish, *Labroidesdimidiatus* (Lenke, 1982). In female *teleost* it was found that melatonin is able to stimulate the embryo development, oocytes maturation and maturation-inducing hormone (Chattoraj*et al*., 2005; Danilova *et al*., 2004). Fluoride has also been shown to cause many biochemical changes and metabolic disturbances in mammals including rats, rabbits, goats and human beings (Shashi*et al.,*1989; Chinoy*et al.,*1994)

Fluoride has been reported to alter the enzyme activity in muscle and liver and decrease the level of blood glucose and muscle protein in *Channapunctatus* (Gupta, 2003).

Therefore, objective of this work is to assess alteration in glucose biochemical parameters in a catfish, *Heteropneustesfossilis* influenced by fluoride level in water and to examine the modulatory effect of melatonin on such variables.

2. Materials and Methods:

Sexually mature catfish, *Heteropneustesfossilis* (body weight range: 50-100 g) were collected from Local market of Raipur &Durg city of Chhattisgarh, India. They were treated with 0.1% KmnO4 solution and acclimatized for 7 days in the laboratory under natural photoperiod and temperature. Water in the aquarium was replenished daily. Laboratory made food containing rice bran, wheat flour, soyabean powder and dry prawn fish was provided during acclimation and experimentation. Three set of experiments were conducted at different reproductive phases- pre-spawning, spawning and post-spawning of the catfish, *Heteropneustesfossilis.* A set of four fish was exposed to 2.5

mg/L of Fluoride dissolved in water for 15 days and another set of fish to 2.5 mg/L fluoride in water along with 2µg melatonin solution in 0.6% normal saline which was injected to each fish per day. A parallel control set was also maintained. After each exposure recovery experiment of 15 days was also carried out. Blood samples was collected for glucose analysis. Obtained results were statistically validated by Students 't' test between control & fluoride exposure, control and fluoride + melatonin exposure and fluoride & fluoride + melatonin exposure.

3. Result and Discussion :

Fluoride mainly affects the level of glucose, lipid, protein, cholesterol and glycogen, which plays an important role for growth, reproduction and survival of fishes. Reduction in growth of fishes was also observed due to alteration in levels of these biomolecules. Scientists have reported increased as well as decreased level of protein, alteration in enzymatic activity of muscles and liver of *Channapunctatus* was reported (Chitra *et al.*, 1983). Gupta in 2003 also reported decreased glucose as well as protein level in blood and in muscles of fish. Significant decrease in serum glucose was also observed in freshwater fish *Channapunctatus* after 75 days exposure of sodium fluoride at 10 ppm concentration. *Channapunctatus* exposed to lower concentration of fluoride resulted in significant decrease in glycogen content while at higher fluoride concentration increased glucose concentration was observed which might be due to disturbance in carbohydrate metabolism as it affects glycogen turnover at high fluoride concentration (Strochkova and Zhavoronkov, 1983). The changes in glucose content reflect the changes in carbohydrate metabolism under hypoxia and other stress conditions and it indicated the presence of stressful stimuli. Lipid play important role in animals, act as building elements for different cellular components, stored as a source of energy for stress conditions (Jezierska *et al.*, 1982).

In present study alteration in glucose was measured in pre spawning, spawning and post spawning phase of *Heteropneustesfossilis* after 15 days exposure with fluoride (2.5 mg/L water) and fluoride with melatonin (fluoride 2.5 mg/L water and melatonin 2µg/fish/day) and then result was compared to know the effect of fluoride in all three phases and possibility of protection by melatonin. After 15 days the fish were kept in fresh water and recovery was measured in terms of alteration in level of glucose. In the present investigation concentration of glucose was also found to be lowered in all the three phases as compared to control when exposed to fluoride and fluoride with melatonin (Table 1,2&3). In pre-spawning phase results for exposure of fluoride alteration in glucose C1 & C2, C2 & C3 , C1 & C3 are (P=0.96<2.45), (P=0.75<2.45) & (P=1.72<2.45) at 5% P was non-significantly decreased and in recovery same result was found. In spawning phase results for fluoride exposure alteration in glucose C1 & C2, C1 & C3 (P=3.52>2.45), (P=3.38>2.45) at 5% P was reported significantly decreased but in C2 & C3 (P=0.07<2.45) at 5% P was non-significantly decreased and in recovery R1 & R2 (P=4.26>2.45) significant but R2 & R3 (P=1.07<2.45) and R1 & R3 (P=1.83<2.45) at 5% P non-significant was found. In post-spawning phase results for exposure of fluoride alteration in glucose C1 & C2, C1 & C3 (P=3.97>2.45), (P=4.05>2.45) at 5% P was found significantly decreased but in C2 & C3 (P=1.24<2.45) at 5% P was non-significantly decreased and in recovery R1 & R2 (P=5.91>2.45), R2 & R3 (P=2.66>2.45) and R1 & R3 (P=6.71>2.45) at 5% P all significantly decreased. Results obtained revealed that fluoride has toxic effect on both human as well as animals. The results of the present investigation indicate that fluoride exposure induces significant changes in the glucose parameter and treatment of melatonin in combination with fluoride was noted to restore the above parameter. Further it is necessary to control the discharge of fluoride compounds into aquatic bodies, because fish is a chief and major source of food worldwide.

PRE SPAWNING PHASE
Table 1: Showing alteration in serum glucose in *Heteropneustes fossilis* after 15days treatment of fluoride and melatonin among pre-spawning phase.

| Sugar in Serum mg/dl	Experimental Phase			Recovery Phase		
	Control	Fluoride 2.5 mg/L	Fluoride 2.5 mg/L + Melatonin 2µg/fish	Control	Fluoride 2.5 mg/L	Fluoride 2.5 mg/L + Melatonin 2µg/fish
Fish 1	78	72	68	75	63	50
Fish 2	90	82	75	90	76	63
Fish 3	90	86	82	108	86	81
Fish 4	98	93	89	111	107	86
Mean	89.00	83.25	78.50	96.00	83.00	70.00
S.D.	8.25	8.77	9.04	16.79	18.57	16.59
SE	4.12	4.39	4.52	8.40	9.28	8.30
't' Test	2.67	0.29	0.77	0.71	0.75	0.84
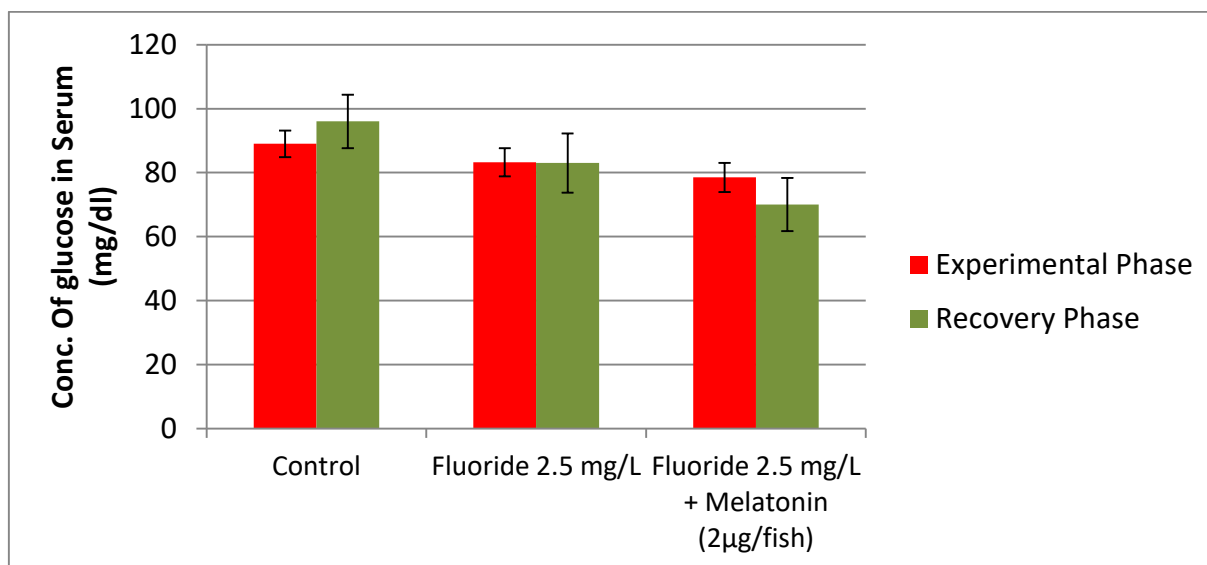
Fig-1: Showing alteration inserum glucosein *Heteropneustesfossilis*during Experimental and Recovery Phase a
spawning phase.

SPAWNING PHASE

Table 2: Showing alteration in serum glucosein *Heteropneustesfossilis*after 15 days treatment of fluoride and
melatonin among spawning phase.

| Sugar in Serum mg/dl	Experimental Phase			Recovery Phase		
	Control	Fluoride 2.5 mg/L	Fluoride 2.5 mg/L + Melatonin 2µg/fish	Control	Fluoride 2.5 mg/L	Fluoride 2.5 mg/L + Melatonin 2µg/fish
Fish 1	66	46	45	57	51	47
Fish 2	58	47	48	53	48	48
Fish 3	60	53	55	60	50	55
Fish 4	67	57	56	56	46	56
Mean ()	62.75	50.75	51.00	56.50	48.75	51.50
S.D.	4.43	5.19	5.35	2.89	2.22	4.65
SE	2.21	2.59	2.68	1.44	1.11	2.33
't' Test	1.24	1.45	1.12	0.35	0.68	1.50
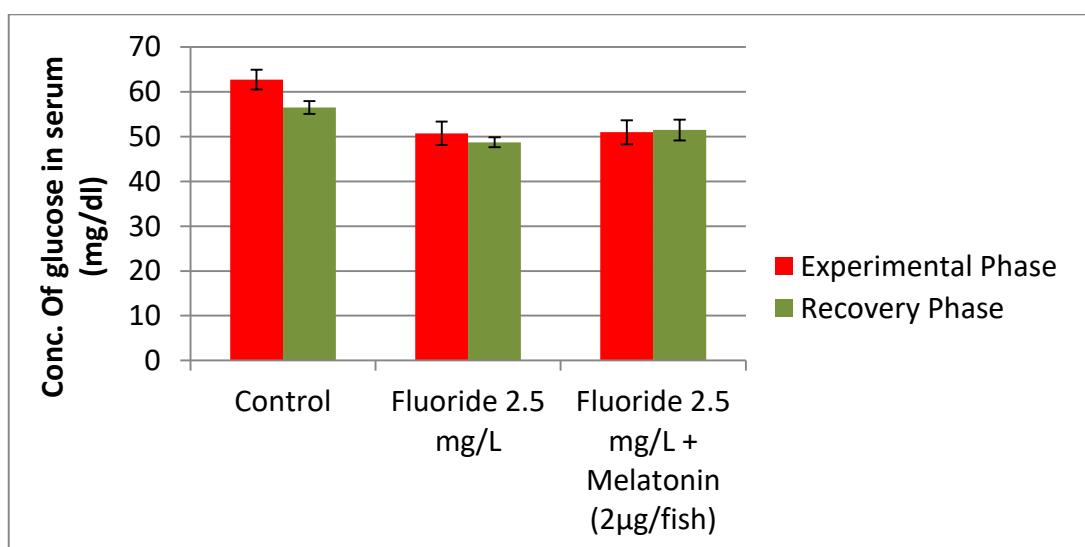
Fig-2: Showing alteration inserum glucose in *Heteropneustesfossilis* during Experimental /and Recovery Phase
among spawning phase.

POST SPAWNING PHASE

Table 3: Showing alteration in serum glucose in *Heteropneustesfossilis*after 15 days treatment of fluoride and melatonin among post-spawning phase.

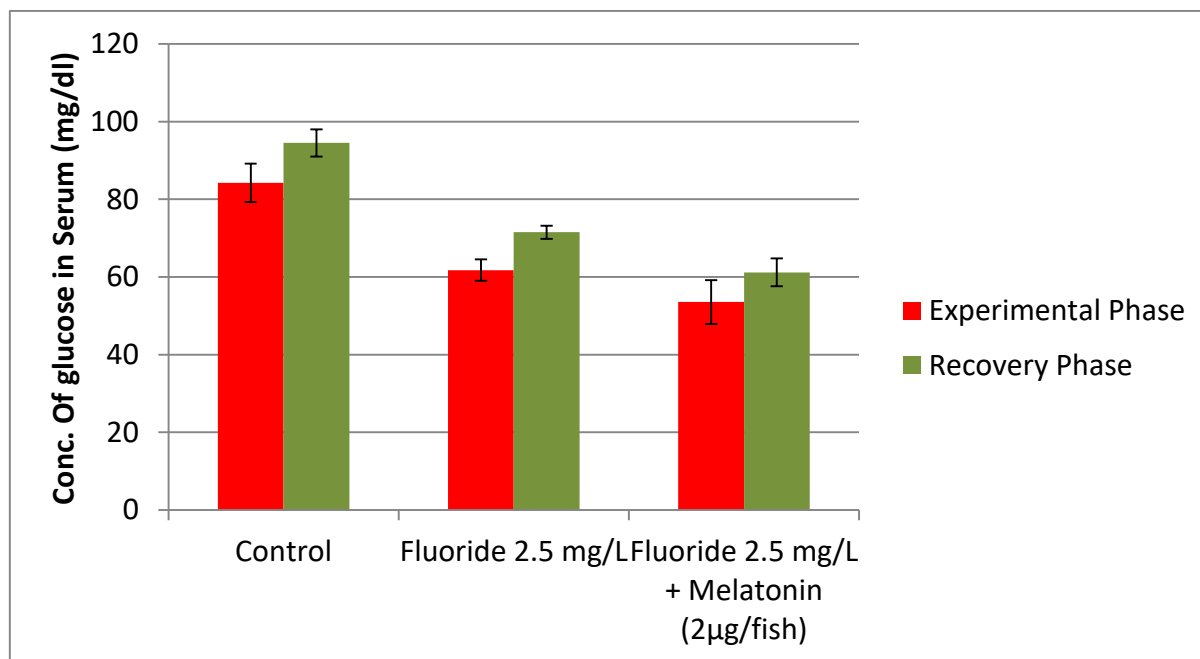| Glucose in Serum mg/dl	Experimental Phase			Recovery Phase		
	Control	Fluoride 2.5 mg/L	Fluoride 2.5 mg/L + Melatonin 2µg/fish	Control	Fluoride 2.5 mg/L	Fluoride 2.5 mg/L + Melatonin 2µg/fish
Fish 1	84	64	68	92	76	55
Fish 2	98	68	56	98	72	55
Fish 3	80	60	41	86	70	65
Fish 4	75	55	51	102	68	69
Mean ()	84.25	61.75	53.55	94.50	71.50	61.18
S.D.	9.88	5.56	11.28	7.00	3.42	7.20
SE	4.94	2.78	5.64	3.50	1.71	3.60
't' Test	0.86	0.63	0.45	0.71	0.88	1.72

Fig-3: Showing alteration inserum glucose in *Heteropneustesfossilis*during Experimental and Recovery Phase among post spawning phase.

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LOW THRESHOLD LASER

[1]Kirti Vishwakarma,   [2]O.P. Vishwakarma
Principal, Gyan Ganga College of Excellence, Jabalpur, India[#1]
Registrar & Prof., Physics Department, Gyan Ganga College of Technology, Jabalpur, India[2]
kirtivishwakarma@ggits.org,   opkirti2007@gmail.com

Abstract: Lasers are more widely used as a high power electromagnetic beam rather than a light beam. Among various types   of lasers; semiconductor lasers have become very popular and useful due to ease in operation and modulation in the   light intensity by electric signal. Quantum dots as well as quantum wires or quantum wells show properties of   standard atomic physics, as a result of the restriction of the motion of conduction band electrons and valence band   holes to a confined region of space of nanometric size. This investigation gives a theoretical background to laser action in   Quantum Dots and optimized structure so as to operate according to requirements. This may be helpful in developing lasers which operate at low threshold and give desired output power at desired wavelength as required in various applications.

Key Words: Quantum Dot, Lasers, quantum wires, quantum well, nanometer.

1.   INTRODUCTION:

Size quantization effect was first applied in the 1970s to improve laser performance.   Remarkable performances have been realized in quantum well (QW) laser in comparison with conventional double hetero-structure (DH) laser, including the weaker temperature dependence. The step-like density of states was revealed to be responsible for the less temperature sensitive operation. In light of this, Arakawa and Sakaki proposed the use of even lower dimensional semiconductors to further improve laser performance.[1]

Quantum dots (QDs) are semiconductors nanostructures that act as artificial atoms by confining electrons and hole in three-dimensions. Due to three dimensional confinements of the carriers in QDs with dimensions comparable to the de Broglie wavelength, the density of states become like delta function, which is dramatically different from that of bulk materials or quantum well. The fundamental advantage of QD lasers include ultra-low threshold current, temperature-insensitive operation, high material gain and differential gain, chirp-free operation, and larger tuning of lasing wavelength. [2-3]

Semiconductor quantum dot active region takes full advantage of the quantum confinement effect. The three-dimensional quantum confinement of the carriers results in discrete carrier energy level structure in a quantum dot (QD) active region.[4-6] The discrete energy level leads in the delta- function- like density of the states, allowing suppression of the excited states. Consequently, the QD laser diode offers the potential performance in low threshold current density[7], high differential gain, high characteristic temperature[8], and low value of alpha factor.[9-10] Most semiconductor QD laser diodes now being researched is based on stacked QD active layers to increase their optical gain to keep lasing at ground state at high temperature or high current density.

2.   THRESHOLD CURRENT DENSITY IN QUANTUM WELL LASER:

The gain can be calculated for a spatial distribution of density of states, where both the conduction band and valence band have band tails. This distribution is applicable to most DH lasers. Once the distribution of density of states is specified, for a given difference DE = (E_{FC} – E_{FV}) and a given temperature, the spontaneous function can be calculated and the gain can be obtained. It is clear that the key parameter determining the gain coefficient is the Fermi functions F_1 and F_2 which in turn depend on concentration of electrons and holes. As we know that the charge carrier's densities are decided by the effective current density J_{eff}, which is defined as[11]

$$J_{eff} = \frac{\eta_{int} J}{d} \quad \dots (1)$$

where, η_{int} is internal efficiency, J is the injected current density and d is the thickness of active layer. Certain minimum effective current density, J_0 has to be reached before a positive gain coefficient is obtained. It is however the maximum value of the gain coefficient g_{max}, that is of greatest importance, because it decides whether or not the lasing threshold is reached and hence determines the principal lasing frequency. The threshold current density in terms of J_{eff} obtained as

$$J_{th} = J_0 \frac{d}{\eta} + \frac{d}{\beta\eta}\left(\alpha_s + \frac{l_n\left(\frac{1}{r_1 r_2}\right)}{2L}\right) \quad \dots (2)$$

where d is the active layer thickness in quantum well, a_s is the loss coefficient due to absorption, scattering etc. L is the effective length of the active medium and r_1, r_2 are reflectivities of the mirrors. where, β is the slope of curve g_{max} vs J_{eff} and it represents the mirror loss.

Confinement factor G is defined as the ratio of the light intensity within the active layer to the sum of the light intensity both within and outside the active layer. This parameter depends the active layer thickness and on the type of electromagnetic mode. In the case of fundamental TE mode confinement factor is defined as[11]

$$\Gamma = \frac{2v^2}{1 + 2v^2}$$

The confinement factor is finally obtained after substituting values as

$$\Gamma = \frac{1}{\left\{1 + \frac{\lambda^2}{\left(8\pi^2 d^2\right)\left(n_1^2 - n_2^2\right)}\right\}} \quad \dots (3)$$

For lasing, the confined mode power should be sufficient to overcome the losses. Hence the lasing threshold current density

$$J_{th} = \frac{d}{\eta}\left(J_0 + \frac{\alpha}{\beta}\right) + \frac{\lambda^2}{8\pi^2 \beta\eta\left(n_1^2 - n_2^2\right)} \frac{1}{d} \quad \dots (4)$$

In the above equation, first term shows the reduced J_{th} for small values of d as observed when d is of the order of mm. The second term becomes important for smaller values of d and gives higher J_{th} for smaller d. The variation of J_{th} with active layer thickness d is shown in Figure 1.
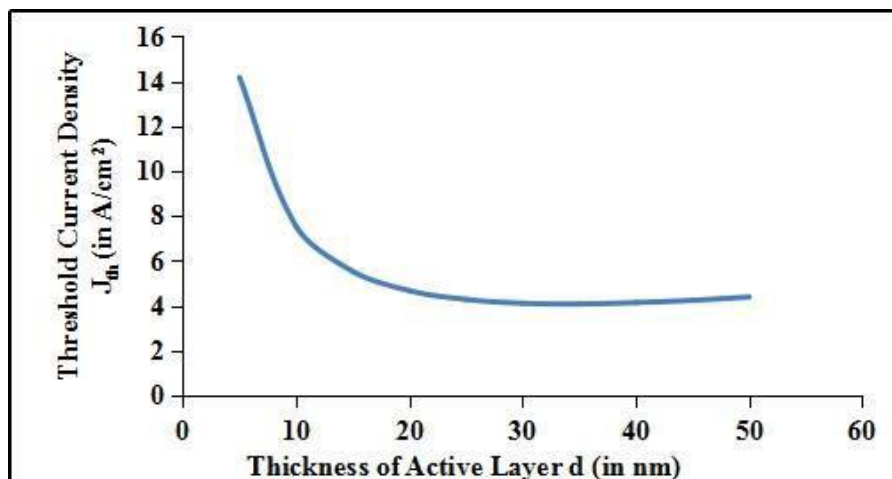

Figure 1: Variation of Threshold Current Density with Active Layer Thickness

3.   THRESHOLD CURRENT DENSITY IN QUANTUM DOT LASERS:

Threshold current density is determined by dividing the experimentally obtained threshold current value by area of the laser. It is always desirable for a laser to have a low threshold current density value.

DEPENDENCE OF J_{TH} ON THE SURFACE DENSITY OF QUANTUM DOTS

Threshold current density is one of the parameters that is direct indication of the quality of the semiconductor material from which the device is fabricated. However, threshold current depends upon the size and the area of the laser device. One laser diode could demonstrate a much higher threshold current than another and yet be considered a much better laser. This is because the area of the device can be large. A laser that is wider or longer obviously requires more electric current to reach the onset of laser action than a laser of smaller area. As a result, when comparing the threshold current values of different devices, it is more appropriate to refer to threshold current density. For transitions from a quantized energy level of an electron to that of a hole in a QD the gain and the spontaneous rate reduced to one QD.

$$J_{th}(N_S) = Z_L \frac{1}{4} \frac{eN_S^{min}}{\tau_{QD}} \left(1 + \frac{N_S^{min}}{N_S}\right)^2 \frac{N_S}{N_S^{min}} + ebBn_1 p_1 \frac{\left(1 + N_S^{min}/N_S\right)^2}{\left(1 - N_S^{min}/N_S\right)^2} \qquad \dots (5)$$

The variation of J_{th} with normalized surface density of QDs, N_S/N_S^{min} is shown in Figure 2. The dependence of J_{th} on $4 \cdot N_S$ is non-monotonic. At $N_S \to N_{S,}^{min}$, the recombination current in the OCL $J_{OCL} \to \infty$. If, however, $N_S \to \infty$, then the recombination current in QDs, J_{QD} tends to infinity. This is because, at $N_S \to \infty$, $f_{n,p}$ tends to a finite, rather than zero value equal to 1/2; thus, on average one electron and one hole must be present in each QD in order to provide lasing, which requires an infinitely high pumping level.
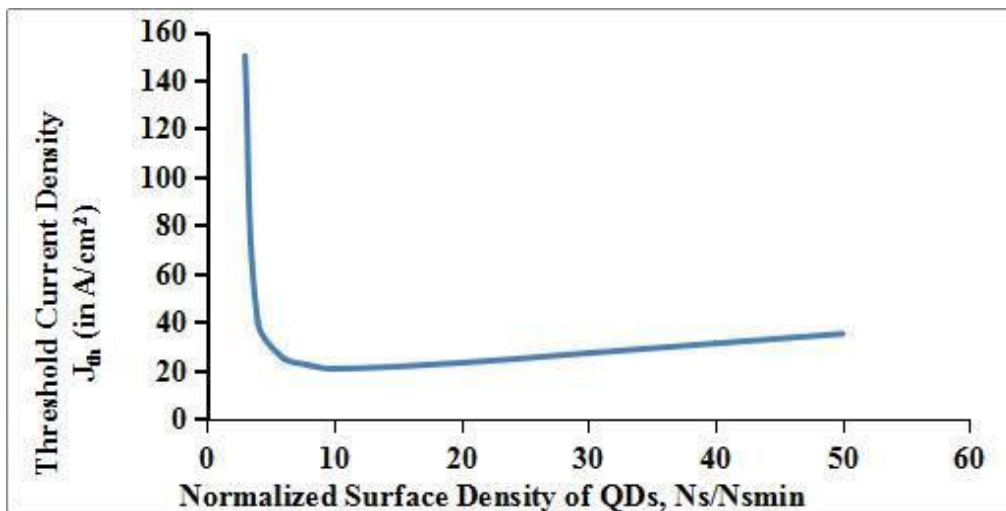
Figure 2: Variation of Threshold Current Density J_{th} as a Function of Normalized Surface Density of QDs, N_S/N_S^{min}.

DEPENDENCE OF J_{TH} ON THE QD SIZE FLUCTUATION (Δ)

The electron and hole occupancies may be expressed as a function of the RMS value of relative QD size fluctuation δ

$$J_{th}(\delta) = \frac{1}{4} \frac{eN_S}{\tau_{QD}} \left(1 + \frac{\delta}{\delta^{max}}\right)^2 + ebBn_1 p_1 \frac{\left(1 + \frac{\delta}{\delta^{max}}\right)^2}{\left(1 - \frac{\delta}{\delta^{max}}\right)^2} \qquad (\delta < \delta^{max}) \qquad \dots (6)$$

The variation of J_{th} with RMS value of relative QD size fluctuation δ is shown in Figure 3. At $\delta \to 0$, J_{th} decreases and tends to the transparency current. At $\delta \to \delta^{max}$, an indefinite rise in J_{th} as QD size fluctuation increases and reaches certain value has been observed experimentally.
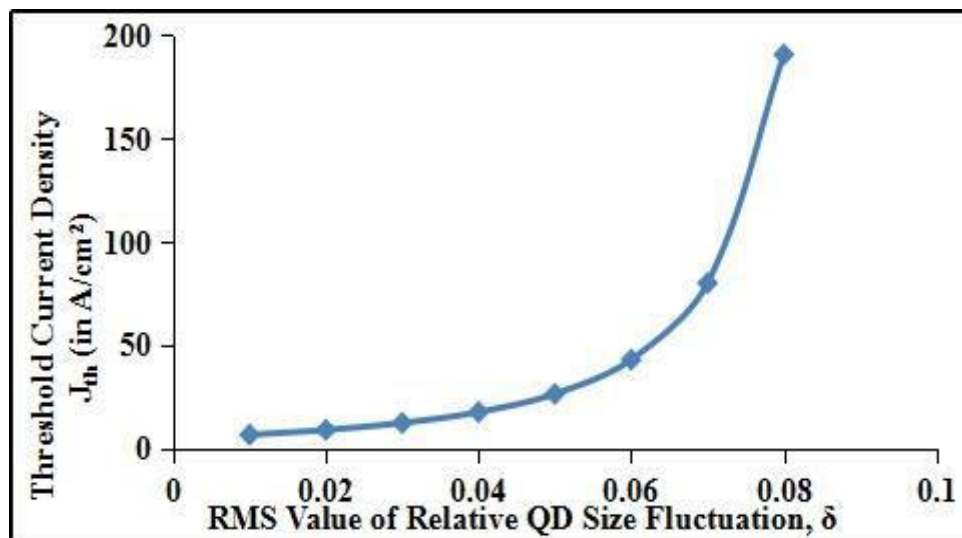
Figure 3: Variation of J_{th} with RMS value of relative QD size fluctuation δ

4.   CONCLUSIONS:

It is clear that, small active layer thickness may be permissible and lower J_{th} can be obtained by reducing losses (a) in the cavity, increasing gain and by maintaining larger difference in the refractive indices of active and confining layers. For smaller wavelengths, smaller d is permissible. The effective current density for transparency depends on the electronic states in the semiconductor. It can have low value in quantum wells due to step type density of states.

The dependence of J_{th} on N_S is nonmonotonic. At $N_S \to N_S^{min}$, the recombination current in the OCL tends to infinity. If however, $N_S \to \infty$, the recombination current in QDs, J_{QD} tends to infinity. This is because, at $N_S \to \infty$, $f_{n,p}$ tend to a finite, rather than zero value. Thus, on average one electron and one hole must be present in each QD in order to provide lasing, which requires an infinitely high pumping level. At $\delta \to 0$, J_{th} decreases and tends to the transparency current. When $\delta \to \delta^{max}$, an indefinite rise in J_{th} is seen as QD size fluctuation increases. It is also observed that, J_{th} increases with increase in size fluctuation.

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Assessment of Physiochemical parameters of Discharge pond of BEC Food Industry

Dr.Chaitali Mathew[1],   K.R.Jyoti[2]

Department of Biotechnology[1], SSSSMV Hudco , Bhilai[1], yadav3015@gmail.com
Department of Chemistry[2] ,Sai College, Bhilai[2] , jyotimashi345@gmail.com

Abstract: *Food processing industry wastewater contains pollution hazards due to its high COD (Chemical Oxygen Demand) and BOD (Biochemical Oxygen Demand). Food industry requires great amounts of water, since it is used throughout most of plant operations, such as production, cleaning, sanitizing, cooling and materials transport, among others as compared to other industries. The wastewater streams with different levels of pollution load (low, medium and high contamination) are collected and treated in an on-site installation. Increasing food production increases the volume and the cost of disposal. Based on the analysis and treatability study of the alternative Physical Treatment by Gravity Settling, it is clear that the BOD and COD are still not complying with the regulatory limits for the discharge. Accordingly, equalization and gravity settling is not considered a feasible alternative for treatment of the industrial wastewater discharge. Analyzed sample reveals temprature26 Salinity ranged from 5.1, Dissolved oxygen, pH - 8.3,EC- 628 rang, Chorine- 343.23, sulphate-130.6,TDS -346. Based on the above calculations the result of the proposed study establish facts about the use of water is not appropriate for various purposes like domestic and agriculture and bioremediation of pollutants is necessary from the sampling sight so that it cannot further harm the biota of the pond and near by population.*

Keywords: *Biochemical Oxygen Demand, Discharge Pond, Wastewater, Pollution.*

Introduction:

Water is a prime natural resource, a basic need and precious national asset. It gives primarily drinking water for humans and animals. Water blesses with its generosity by providing us with numerous aspects, Essential to survival. The ancient civilizations used to flourish and develop alongside ponds in order to avail the comforts and benefits provided, that included supplies of fresh water fertile soil for cultivation purposes more. Ponds sustain life, not only mankind but also flora and fauna.

But nowadays major surface and ground water crisis is gradually unfolding in India. The crisis is the lack of access to same water supply to millions of people as a result of inadequate water management and environmental degradation.

Increasing effect of industrial waste we found effective which affect water quality and accumulated real amount of heavy metals which would have adverse effects on life.

The elevated value of these parameters as of great concern to the health not only to humans but also flora and fauna flourishing around it. So, commercial effluents are the main source of pollution to these water bodies/resources which has polluted both surfaces as well as ground water bodies.

Study area and Sample collection:-

Analysis: The pond water samples were collected in winter season on month of January 2020 from "Hathkhoj industrial area" and it is collected in plastic bottles with algae and fungal and transport from the laboratory for the treatment of parameters. All parameters were analyzed by the standard method.
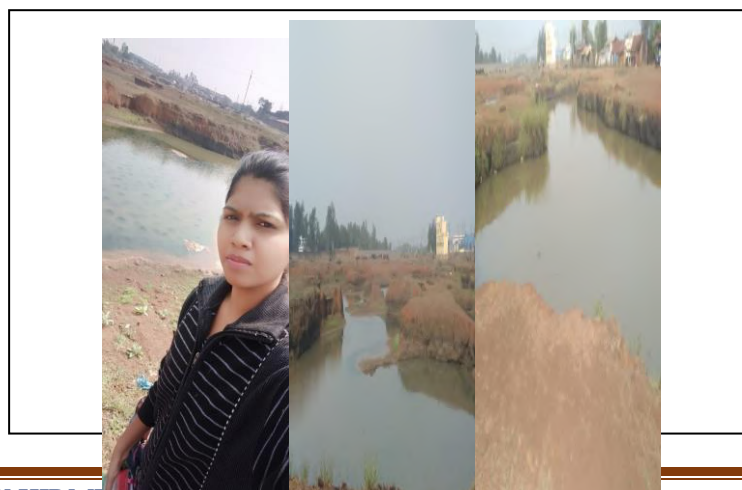
Materials and Methodology:-

Temperature:-temperature was analyzed by thermometer which is used laboratory purpose.

pH: pH was analyzed by the pH meter using standard solution of water.

Electrical conductivity and TDS: - the collected water samples were analyzed for EC and TDS by using EC – TDS meter and were recovered in $m\mu$ Siemens per cm (μscm^{-1}) and mile gram for liters (mg / l) respectively.

Total hardness and total Alkalinity: - The collected water samples were analyzed for TH, TA and chloride by using titration method. They were calculated in mg/l
TH ion concentration was calculated by using Eriochrome Black T (EBT).

Total hardness (TH) = volume of titrant * mol wt of $CaCo_3$

Total alkalinity was calculated by 1% phenolphthalein & mix indicator reagent as indicator against sulphuic acid (H_2SO_4)

$$TA = \frac{volume\ of\ titrate*((N\ of\ AgNO_3)*(50000))}{volume\ of\ samples}$$

Cl^- Was calculated by using potassium dichromate ($K_2Cr_2O_7$)   reagent as indicator against silver nitrate.

Concentration of $Cl^- = \frac{((volume\ of\ titrate)*(N\ of\ AgNO_3)*(mol\ wt\ of\ Cl^-)*(1000))}{volume\ of\ samples}$

Water samples:-
The physical parameter such as tamp, pH, were analyzed at simplify site after the collection of the samples were examined in the laboratory.
The various chemical parameter such as hardness alkalinity,Cl^-, SO_4^{2-}, TCS, EC, DO, COD, BOD were analyzed in the laboratory.

Chemical Oxygen Demand (COD):- the chemical oxygen demand (COD) method determines the quantity of oxygen required to oxidize the organic matter in a waste sample, under specific conditions of oxidizing agent, temperature and time.

Biochemical Oxygen Demand (BOD):- most commonly expressed in mg of oxygen consumed liter of sample at $20°C$ and is often used as surrogate of the degree of organic pollution of water.

Dissolve Oxygen (DO):- Take BOD stoppered bottle brim fuel with sample water and add $MgSO_4$ by inserting the calibrated pipette. Add 2ml of alkali iodide azide reagent. Mix the sample several times. If O_2 is present, brownish orange cloud of precipitate will appear. Add 2ml of concentrated H_2SO_4 .Now titrate it with sodiumthiosulphate to a pale straw colour and add 2ml of starch. So, a blue colour forms, continues slowly titrating until the sample turns clear. As this experiment reaches the end point.

RESULT &DISCUSSION: -

Table 1.1: Characteristics of the industrial wastewater characterizations:-

PARAMETERS	Total alkalinity
Experimental values	700
Turbidity	180
Temperature(^{0}C)	23.6
Total alkalinity(mgl^{-1})	180.17
Chloride(mgl^{-1})	343.2
sulphate(mgl^{-1})	130.6
Dissolve oxygen(mgl-1)	346
Biochemical oxygen demand(mgl^{-1})	90.3
Chemical oxygen demand (mgl^{-1})	182.6

pH	8.3
Electrical conductivity	628
Total Dissolved Solids(ppm)	346
Total hardness(mgl^{-1})	330

Discussion: -

Temperature: - The temperature of the sample pond water is $26°C$. A slight variation has been observed in the temperature. During measurements $26°C$. Temperature of pond water shows a good correlation with pH 8.3.

PH:- The pH of sample pond water has been measured to the test the acidity alkalinity is 8.3 the value have same has been found in the range 8.3 Some alkaline and acidic characteristic has been found in pond water sample.

Electrical Conductivity (EC):- EC was measured to measure the conductance of ions in the samples, that is Cl^-, SO_4^{2-}, TDS, the electrical conductivity was measured in the range of 628 μscm^{-1} to 630 μscm^{-1} for the samples collected from pond water.
The electrical conductivity of pond water. Shows a correlation with TDS 346, TH 72, Cl^- 343.23 and SO_4^{2-} 130.6

Total Hardness (TH):- The observed value of the pond water sample ranged from 72 mg/l.

Total Alkalinity (TA):- the total alkalinity was measured range 700 mg/l in pond water sample respectively.

Chloride (Cl^-):- the chloride (Cl^-) ions concentration was measure in the collected water sample through to titrimetric method which range 343.23 in pond water sample respectively Cl^-concentration should a good correlation with SO_4^{2-} in pond water.

Sulphate (SO_4^{2-}):- the sulphate (SO_4^{2-}) ions concentrated was measurement in the collected water through titrimetric method ranged from 130 mg/l to 132 mg/l in pond water sample respectively.

Dissolve Oxygen (DO):- The DO of sample pond water. Values have been found in the range 346
 contaminant has been found in pond water sample.

Biochemical Oxygen Demand (BOD):- The pond water of sample pond water value has been found in the range 90.3

Chemical Oxygen Demand (COD):- The pond water of sample pond water value has been found in the range182.6Some

Conclusion:- The value of physiochemical properties in the study of discharge pond water analyzed in which pond water sample were found to be majority contaminate higher than the recommended limits in an indicate of pollution hazards.

The contamination of commercial effluents coming from industrial wastes and municipal waste which are dumped directly into the pond water without any treatment which have hammered public health.

Due to the daily consumption of the contaminated water the harmful component like chloride sulphate when not consumed in permissible limits, have shown a drastic effect on human being and animals by its involvement in food chains.

All the industrial and municipal waste or dumped on if without any treatment the pond water harmful from the terrestrial and ecosystem as well as flora.
So we may conclude that this company waste like solid waste as well as wet waste can share in the containers on any other than it can used as a compost which in last for soil fertility so by this environment soft and pond water will be hazardous.

Recommendation:
        The results suggested high contamination in discharge pond due to which not only affect flora and fauna but also ecosystem nearby it is adversely affected leading to various water borne diseses in human population

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"CONVERSION OF WASTE IN TO BEST" A PHYSICO-CHEMICAL ANALYSIS OF FLY ASH OF CAPTIVE THERMAL POWER PLANT OF J.K. LAXMI CEMENT, AHIWARA DURG (C.G.)

Dr.PRATIBHA GUMASTA
SAI COLLEGE SECTOR-6, BHILAI NAGAR,
Pratibhagumasta5@gmail.com

ABSTRACT: *Fly ash is the waste product of the thermal power plant, it is end residue of combustion of coal, but not fully burned. Physical properties of fly ash depending upon the coal type, boiler type, ash content in coal, combustion method and collector setup. The factor affecting or influencing the physical properties are also responsible for wide variation of chemical properties of fly ash. In this present work physico-chemical parameters were analyzed. In chemical composition of fly ash many metals are also present, so it may be beneficial for non fertile soil and by this addition we can utilized the waste of thermal power plant.*

KEY WORDS: *pH, electrical conductivity, environmental pollution*

INTRODUCTION:

Fly ash is the end residue of combustion of coal, not fully burned and minerals constituents of coal which is comprise of wide range of inorganic particles bulk, density, high surface area, and sandy slit to loam texture.[1]It has very fine spherical particles of 100 microns; it has Ferro aluminates silicate minerals with elements like Si, Al, and Fe together with significant amount of Ca, Mg, P, K, and S.[2]

Two types of ashes are generated in the thermal power plants, one is fly ash and second one is bottom ash. Fly ash is chemically reactive, due to many smaller and heavy particles are present in chemical composition of fly ash.[3]

Fly ash produced by bituminous coal is very fine[4] Presence of aluminum is bounded in the fly ash is due to biological toxicity.[5]fly ash also contains essential macro nutrients including P,K,Ca,Mg and S and micronutrients like Fe, Mn, Zn,Cu,Co,B,Mo. The pH of fly ash is depended upon the presence of sulphur content, whereas the basic nature of fly ash depends upon the high concentration of sulphur.

MATERIAL AND METHOD-STUDY AREA:

For the present work, CAPTIVE THERMAL POWER PLANT OF J. K. LAXMI CEMENT is located in AHIWARA VILLAGE OF BHILAI, DURG DISTRICT in state of CHHATISHGARH. It belongs, to RAIPUR DIVISION. Bhilai city is also known as steel city of Chhattisgarh.

SAMPLE COLLECTION:

Fresh fly ash collected from the dumping site of thermal plant in carry bag.

PHYSICOCHEMICAL ANALYSIS OF SAMPLE-
pH-

The pH value of the most important physiochemical parameters affects the important properties of fly ash which observed by the pH metric method the result found in the range 9.2.

ELECTRICAL CONDUCTIVITY-

The measurement of electric conductance is the measurement of the current; it gives a clue for the soluble salt that present in the sample. The value is found in the range between 0.18.

TOTAL NITROGEN-

Quantity of nitrogen in fly ash was analyzed by Kjendal method it affects the Ph of fly ash. The nitrogen is found between the ranges of 0.004.

PHOSPHROUS-

It is measured by the volumetric method and its range is 0.18.

CALCIUM-

Calcium content present in oxide form it and It is determined by EDTA volumetric method and the value is 1.8

CARBON-

It is important content for fly ash and It is determined by $K_2Cr_2O_7$ volumetric method, its value is 3.2

IRON-

It is determined by Kjendal method, it is present in oxide form and its value is 8.2.

PHYSICOCHEMICAL ANALYSIS OF FLY ASH IS SHOWN BY FOLLOWING TABLE:

S.No.	PARAMETRS	FLY ASH
1	pH	8.8
2	Electrical Conductivity	0.18
3	Total Nitrogen	0.004
4	Phosphorus	0.18
5	Calcium	1.8
6	Carbon	0.32
7	Iron	8.2

CONCLUSION:

On the basis of above analysis, pH of fly ash of projected area is 9.2 it is basic in nature, and some elements are present in their chemical composition like N, P, C, Ca, Fe, Cu, Zn. They are helpful for increases the fertility of soil, and their basic nature is also beneficial for control the acidic nature of fly ash, so we can utilized this fly ash in soil and improve the chemical composition of soil for the best yield of crop production and try to control the environmental pollution.

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ROLE OF *PSEUDOMONAS* SPECIES AS BIOFERTILIZER AND BIOCONTROL AGENT

Niharika Dewangan[1],   Ranjana Shrivastava[2],   Shirin Anwar[3]
Swami Shri Swaroopanand Saraswati Mahavidyalaya[1&3] Govt. VYT PG Autonmous college, Durg[2],
Govt. D.T College Utai.
Email Address: dewanganniharika081@gmail.com

Abstracts: *In present study Pseudomonas species has been isolated from rice rhizosphere of 5 different region of Durg district and screened for their plant growth promoting activities. Pseudomonas aeruginosa and Pseudomonas putida were isolated and selected for further study. The IAA production by P. putida and P. aeruginosa is found to be 15.65µg/ml and 13.80µg/ml respectively after 5 days of incubation in nutrient broth medium containing tryptophan (100µg/l). The phosphate solubilization by P. aeruginosa is recorded 185.71µg/ml and by P. putida 221.06µg/ml after 15 days of incubation in Pikovskayas broth medium. Both the species of Pseudomonas shows antagonistic property against fungal pathogen Fusarium. The growth inihibition by P. putida is 4.6mm and by P. aeruginosa is 5.2mm in three days of incubation in solid PDA media in petriplates. Thus the result shows that both the species of Pseudomonas are potential plant growth promoting rhizobacteria and a bio-control agent. Such potential bacteria must be greatly used as biofertilizers to improve the growh of rice plant.*
Key Words: *Pseudomonas, rice, phosphate, IAA.*

Corresponding author: Niharika Dewangan, Email - *dewanganniharika081@gmail.com*

Introduction

Biofertilizers are the living fertilizers composed of microorganisms that enhance nutrients availability to plants. They are eco friendly, cheap and economically viable. With day by day increasing population, especially in developing countries like India the stress on agriculture is also increasing continuously. With the development of the country, the land area under farming is decreasing. Hence the land available for agriculture should be economically utilized and maximum result be obtained.(1). Agriculture crop such as rice need better input of nutrients for better production. In rice production urea is used as fertilizer since long time but due to its excessive use urea nitrogen is lost by ammonia volatilization which causes environmental pollution. (2). The chemical fertilizer can be substituted by biofertilizer which reduce environmental pollution and increase yield of the crop. (3,4) Biofertilizers contains beneficial microorganisms and are low cost renewable source of plant nutrition.(5). Number of plant growth promoting rhizobacteria including Pseudomonas act as bio-control agent by suppressing the growth of pathogen.(6, 7,). Among soil microorganisms *Pseudomonas* species is important since it is widely distributed in soil and able to colonize plant rhizosphere. They promote plant growth by producing auxin, siderophore, and hydrogen cyanide and solubilize phosphorous. (8,9). Significant increase in the yield percentage has been observed in wheat, sorghum and maize seeds with *Pseudomonas. Pseudomonas* increases nitrogen uptake efficiency.(10).

Some species are found to be urea adaptive.(11) Some species of *Psedomonas* are found to be efficient biocontrol agent.(12). The insecticide tolerant *Pseudomonas putida* was isolated from the mustard rhizosphere.(13). Presence of *Pseudomona*s in biofertilizer play an effective role in growth of chickpea.(14). Seeds of various plants inoculated with *Pseudomonas* promote growth and increase yields.(15, 16, 17, 18). *Pseudomonas* species solubilize phosphorous and make it available for plants. Inoculating it increases yield and yield component of corn plant. The objective of present study is to isolate potential *Pseudomonas* species from rice rhizosphere and screen them in vitro for their plant growth promoting activity and bio control activity against plant pathogen *Fusarium.*

Material and Method

All the laboratory experiments were conducted in Department of Botany, Govt. VYTPG Autonomous College Durg (C.G.). The chemicals used for present experiments were purchased from Himedia laboratories Pvt. Ltd. and Loba Chemie Laboratory reagents and fine chemicals. All the glassware used was Borosil made.

Isolation of Pseudomonas

Pseudomonas species are isolated from rhizospheric soil of rice plant by using the serial dilution plate techniques in King's medium (19). Rice plant was uprooted and place in sterilized polythene bags and immediately brought to laboratory. 10 gm of rhizospheric soil is

mixed with 90 ml distilled water through gentle shaking and the serial dilution technique is performed. An aliquot of the suspension is spread in the petriplate containing King's media. The plates were then allowed to incubate at 28ºC for 3 days. Fast growing *Pseudomonas* colonies were selected and maintained by sub-culturing the isolates in petriplates.

Morphological Characterization

Colony characters such as color, elevation, form and motility of isolated *Pseudomonas* were noted.

Auxin productin

Isolated *Pseudomonas* species were screened for auxin production. *Pseudomonas* isolates were grown in nutrient broth media containing tryptophan (100µg/l) and incubated at 28ºC for 5 days. 2ml culture suspension is then centrifuged 10000 rpm for 15 minutes. 2 drop of orthophospharic acid and 4 ml Salkowaski reagent is added to 1 ml of supernatant fluid. Appearance of pink color shows auxin positive test. Quantitative estimation of auxin is done in UV spectrophotometer at 530 nm after 30 min.(20).

Phosphate Solubilization

Pseudomonas species were tested on Pikovaskya's media for phosphate solubilization as per the protocol followed by Goenadi *et al*, 2000(21). All the bacterial isolates were inoculated on the plate containing Pikovaskya's media and incubated at 37°C for 7-8 days. Staining the plates by flooding with 0.025% bromophenol dye confirms the solubilization of phosphate by *Pseudomonas.* Quantitative test for phosphate solubilization was carried out in liquid Pikovaskya's media amended with 5 gm/l of tricalcium phosphate in test tubes and incubated at 37°C for 14 days. The concentration of soluble phosphate in the supernatant was estimated spectrophotometrically by stannous chloride ($SnCl_2.H_2O$) method. (22).

Identification of *Pseudomonas*

Selected *Pseudomonas* isolates were preliminary identified following the procedure of Bergey's manual on the basis of biochemical tests. Gram's staining test is performed and cell shape is noted. Biochemical test such as glucose, fermentation, urease hydrolysis, nitrate reductase, citrate utilization, indole production VP and MP reaction has been done.

Isolation of *Fusarium*

Fungal pathogen *Fusarium* was isolated from the soil of tomato field by dilution plate technique using PCNB Agar plate. The plate was incubated at 28°C for 5 days.

Antagonistic property of *Pseudomonas*

Bio control assay was performed on Potato Dextrose Agar plates using dual culture method by inoculating *Fusarium* opposite to *Pseudomonas putida* and *Pseudomonas aeruginosa* in separate petriplates. The antagonistic property of both the species of *Pseudomonas* against *Fusarium* is compared with Streptomycin an antibiotic. The fungal culture plate without *Pseudomonas* species and streptomycin is also kept as control. The plate is incubated at 28°C for 48-72 hrs. Growth inhibition of pathogen was recorded. Radial growth of pathogen in dual culture is noted after 3 days and percentage inhibition was calculated by the formula $I\% = (C-T)/C*100$, where I is Percentage inhibition of pathogen by antagonist, C is radial growth in control and T is radial growth in treatment.

Observation and Result

Total six species of *Pseudomonas* were isolated from the rice rhizosphere and named as Psd1, Psd2, Psd3, Psd4, Psd5 and Psd6. Pseudomonades were rod shaped gram negative bacteria. All the species isolated were found to be motile. Color of Psd1 is creamy, Psd3 is orange and Psd2, Psd4, Psd5, Psd6 is off white. Except Psd3 all the isolates shows flat elevation. Psd3 is raised in elevation with form entire.

Psd1 and Psd5 show both auxin production and phosphate solubilization. Psd3 only produce auxin but doesnot solubilize phosphate. Psd2, Psd4 and Psd6 shows none of the PGPR activity tested. Thus Psd1 and Psd5 were selected for further study.

The biochemical identification designated Psd1 as *Pseudomonas putida* and Psd5 as *Pseudomonas aeruginosa.* Both the species of *Pseudomonas* shows positive result for Oxidase, Catalase, Citrate, Indole, and Starch test but shows negative reaction for Methyl Red and Vouges Proskeur. Nitrate reductase negative test was seen in *P.putida* and positive in *P. aeruginosa* Both the species show negative test for glucose fermentation. Except mannitol both the species of *Pseudomonas* shows fermentation of arabinose, fructose, glycerol and xylose.

IAA production is seen more in *P.putida* than in *P. aeruginosa.* The amount of IAA produce is 15.65µg/ml in *P.putida* and 13.80µg/ml in *P. aeruginosa.* Similarly the amount of phosphates solubilized is determined to be 221.06±1 by *P.putida* and 185.71±1 by *P. aeruginosa.*

Both the species were found to inhibit the growth of fungal pathogen *Fusarium*. The growth inihibition by *P. putida* is 4.6mm and by *P. aeruginosa* is 5.2mm in three days of incubation in solid PDA media in petriplates. Percentage of inhibition found in *P. putida* is 41.02% and in *P. aeruginosa* is 71.79%. The inhibition percentage in streptomycin plate was recorded minimum 2.56%.

Table: 1. Morphological Characterization of *Pseudomonas* isolated

Pseudomonas isolates	Gram's Stain	Color	Form	Elevation	Margin	Motility
Psd 1	-	Creamy	Irregular	Flat	Undulate	Motile
Psd 2	-	Off white	Irregular	Flat	Undulate	Motile
Psd 3	-	Yellowish	Circular	Raised	Entire	Motile
Psd 4	-	Off white	Irregular	Flat	Lobate	Motile
Psd 5	-	Off white	Irregular	Flat	Undulate	Motile
Psd 6	-	Off white	Irregular	Flat	Undulate	Motile

Table: 2. Screening for PGPR activity (Qualitative)

Pseudomonas isolates	Auxin production	Phosphate solubilization
Psd 1	+	+
Psd 2	-	-
Psd 3	+	-
Psd 4	-	-
Psd 5	+	+
Psd 6	-	-

Table: 3. Biochemical Identification of *Pseudomonas*

Biochemical Characters	Psd 1	Psd 2
Grams reaction	-	-
Oxidase	+	+
Nitrate reductase	-	+
Citrate	+	+
Catalase	+	+
Indole	+	+
Starch	+	+
Methyl Red	-	-
Vouges Proskeur	-	-
Glucose fermentation	-	-
Mannitol	-	-
Fructose	+	+
Arabinose	+	+
Glycerol	+	+
Xylose	+	+
Identified as	*P. putida*	*P. aeruginosa*

Table: 4. IAA production and Phosphate solubilization (Quantitative)

Isolates	IAA production µg/ml	Phosphate solubilization µg/ml
P. putida	15.65	221.06±1
P. aeruginosa	13.80	185.71±1

Table: 5. Antagonistic property of *Pseudomonas*

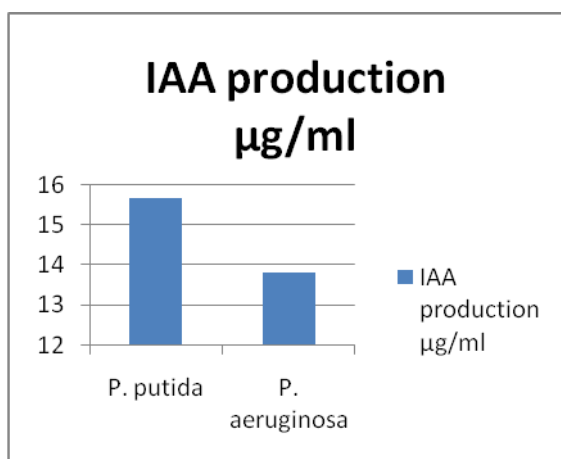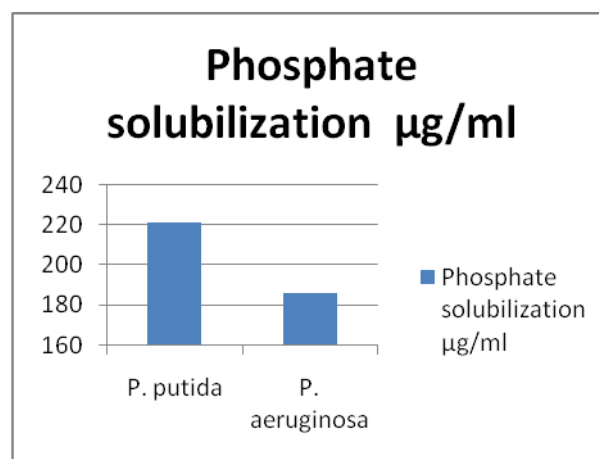| Isolates	Percentage Inhibition
P. putida	41.02 %
P. aeruginosa	71.79 %
Streptomycine	2.56 %

Fig 1. IAA production by *Pseudomonas*

Fig 2. Phospate solubilization by *Pseudomonas*

Discussion:

Several researchers worked in field of biological control of various fungal and bacterial soils born plant pathogen with the antagonistic *Pseudomonas* species which is plant growth promoting rhizobacteria and bio control agent as well. The IAA production is reported to be 9.75µg/ml from *P. flurescence* and also invitro antifungal activity against *Pyricularia oryzae* is seen by Mansoureh *et al*, 2012. The invitro efficacy of *Pseudomonas flurosence* against *Fusarium moniliforme* was also evaluated by Rajappan *et al*. One more species of *Pseudomonas* shows antifungal activity against *Fusarium.* Van peer *et al* (1991) reported protection of carnation from fusarosis due to phytoalexin accumulation upon treatment with *Pseudomonas* strain.The present study reveals that *P. putida* and *P. aeruginosa* exhibit significant plant growth promoting property and antifungal activity. In tests although *P.putida* shows more auxin production and phosphate solubilization but pathogen growth inhibition percentage was recorded more for *P. aeruginosa*. But when compared with streptomycin both the species of *Pseudomonas* shows remarkable antifungal effect indicating their antagonistic nature.

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Conclusion :
Since the use of chemical fertilizer is harmful not only for environment, soil health but also for the plant health and research in the field of bio fertilizer and bio control agents is increasing so such type of microorganisms must be used widely as bio fertilizer and bio control agent. The present study shows in vitro plant growth promoting property and antagonistic nature of *Pseudomonas* species. However there is a need for further screening of large number of *Pseudomonas* strains which serve as a bio fertilizer and a bio control agent and must be commercialized more and more for sustainable agriculture.

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A PHYSICO-CHEMICAL ANALYSIS OF SOIL FROM INDUSTRIAL AREA OF AKALTARA (JANJGIR-CHAMPA) CHHATISHGARH

[1]Dr. NARESH CHANDRA DESHMUKH,   [2]Dr. SUNITA GUPTA*,
[1]Assistant Professor Chemistry, SHAIL DEVI MAHAVIDYALAYA ANDA DURG
[2]Assistant Professor Chemistry, Govt. W.W. Patankar Girls College, Durg*
[1]Naresh@gmail.com   [2]gupta_sunita@ymail.com

ABSTRACT: The quality of soil is the most important factor of crop production. On the basis of physiochemical analysis of various parameters such as pH, electrical conductivity, total organic carbon, available phosphorus, available potassium etc, are indicated that the soils of industrial areas of AKALTARA in JANJGIR CHAMPA DISTRICT are not beneficial for the growth of plants due to deficiency of micro and macro nutrients, alkalinity of soil and low pH of soils are responsible for the hindrance of plant growth, the required chemical fertilizers for the improvements of physico-chemical parameters of soils for the best crop production.

Key words: pH, Electrical Conductivity, Hardness, TDS, Alkalinity.

INTRODUCTION:

In Akaltara, due to industrialization and other contaminations of soils from industrial areas gets polluted, some soil character such as physical and chemical, biological characters are defined as the indicator of soils quality. Physical indicators are related to the arrangement of soil particles and pores of bulk density stability and soil texture, clustering etc. physical indicator is direct ally affected the root growth seeding and the movement of water in plant body. Soils profile, soils formations is the constructive and destructive process.[1] growth of plant in specific areas will determined the types of soils.

Measurement of pH, electrical conductivity, organic carbon, micro and macro nutrients are define the chemical character of soils and that are needed for the growth of plant and development, the soils chemical of soils are affected the plant growth.

STUDY AREAS:

The present study deals with the analysis of soil samples, which we collect in the period of November month from industrial areas of Akaltara in Janjgir champa District. Soil of Akaltara region are affected by the waste disposal as well as industrial effluents. This study was primary focused on testing of soil quality from 5 sampling point, the numbered as the 1 to 5. The sample were collected in a plastic bucket and thoroughly collected and mixed on a piece of clean cloth, air dried and lumps were broken using wooden mortar and pestle.[2] particle were crushed and stored in a labeled bottles.

METHODOLOGY:

pH value of soil samples were determined by Jackson method using pH electrode. 10 gram sample was mixed with 20 ml distil water and stirred with glass rod for 20 minutes and let or ½ hours and the pH value was determined. The pH value of soil explains the acidic or alkaline nature of soil. It is very important for the availability of micro and macro nutrients of soil.Electrical conductivity of soil sample were determined by electric conduct meter, for this 10 gram sample was added in 20 ml distil water and keep stirring suspension and stand for 20 minutes then add conductivity cell inserted in a solution then measured the conductivity of soil. It explains the presence of soluble salt of soil samples.

Organic matter is estimated by using , 1 gram sample was taken in a 500 ml conical flask and 1 ml $K_2Cr_2O_7$ and add Conc. H_2SO_4 then it shaken about 20 minutes then add 200 ml distil water and 10 ml phosphoric acid and 1 ml diphenyl amine indicator were added and titrate it against standard ferrous ammonium sulphate solutions until it change the colour from blue to violet green[3]. Organic matter is important factor for the growth of plants, its provide micro and macro nutrients to plants.

Phosphorus was estimated by volumetric method 2.5 gram of dried sample and add spoon activated charcoal and shake it for 20 minutes then filter the above solution, take the filtrate in a volumetric flask and neutralized with ratio for 1:4 H_2SO_4, phenolphthalein as indicator then added distil water and few crystals of stannous oxalate blue colour developed and intensity of blue colour was measured in photoelectric colorimeter at wave length of 730 nm, repeat the process with blank solution.[4] Organic matter is plays an important role in growth of plants, it provides micro and macro nutrients to plants with the help of plants roots.

Micro nutrients such as Cu, Zn, Fe, and estimated by A.A.S. method. These are important for the growth of plants[5], it is required in very small quality but they are essential for the plants during the process of metabolism in plant cells, boron is determined by the micro nutrients which are also determined.

RESULT-

On the basis of above analysis it's shown that the value of pH of ranges from 6.72 to 7.72 its indicating that the soil of project area is alkaline due to presence of soluble minerals. Nutrients deficiency are present in soil sample is affected the growth of plants. The electrical conductivity of soils samples between 0.2 to 3.02 ms/cm which the measurement of alkalinity of soil.

The value of organic carbon is 0.28 to 1.2 %. Phosphorus plays an important role in growth of plant cell during the process of metabolism. The range of phosphorus is 9 kg/ hectare to 11.52 kg/ hectare. From the above analyzed samples potassium range is 110 kg/ hectare to 740 kg/ hectare it is shown that the potassium deficiency is present in the soils samples. Copper is also required for the plant health in previous analysis the range of copper is 1 to 10 ppm. Iron is essential for the chlorophyll synthesis during the process of photosynthesis and other enzymatic activity; it is present in analyzed sample between2.08 to 22.04 ppm. Mn is required for the protein synthesis and photosynthesis, which is present in soil samples between 10.35 to 22.18 ppm.

Zn deficiency is also affected the growth of plants cells. (Graham and Well 1991) the concentration of Zn in soil is 0.22 to 4.56 ppm and the concentration of Boron is 0.06 to 0.044 ppm.

SHOWING THE VARIATION IN DIFFIRENT PARAMETERS OF SOIL SAMPLE FROM INDUSTRIAL AREA OF AKALTARA (JANJGIR-CHAMPA)

Sample Number	pH	Electrical conductivity	Organic carbon	P	K	Cu	Fe	Mn	Zn	B
1	6.72	0.20	0.28	40	210	1	12.8	10.35	0.22	0.06
2	6.73	0.50	0.50	52	225	3	16.00	15.35	1.20	0.08
3	6.75	0.30	0.90	80	350	8	18.00	18.50	2.5	0.12
4	6.80	1.75	1.00	110	450	9	20.50	20.50	3.0	0.25
5	7.00	3.20	1.28	152	650	10	22.18	22.18	4.2	0.44

EC-ms/cm, Organic c-%, P&K- Kg/Hectare, Cu, Fe, Mn, Zn, and B ppm

CONCLUSION:

On the basis of physiological analysis of soil samples of Akaltara industrial areas, it is indicated that the uncontrolled solid waste disposals are present in soil samples, It is required on the excessive fertilizers for the best crop production, deficiency of micro and macro nutrients are also responsible for the alkalinity of soil it can be removed by the application of fertilizers for the best production of crop.

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Iterated Function System in S-Metric Space

Priyanka[1], 　 S.C.Shrivastava[2], 　 R.Shrivastava[3]

[1, 2]Department of Applied Mathematics, Rungta College of Engineering & Technology, Bhilai,(C.G.), India.
[3]Department of Applied Physics, Shri Shankaracharya Engineering College, Bhilai,(C.G.), India.

Abstract: *In this paper, we study the concept of $S-metric$ spaces and give some of their properties. The main purpose of this paper is to introduce IFS in standard S-metric space. Our results contain some of the recent results reported in the literature.*

Mathematical subject classification: 28A80, 54H25

Keywords: Iterated Function System; Compact set; Contraction mapping; S-Metric Space.

1. Introduction:

Metric spaces are very important in mathematics and applied sciences. So, some authors have tried to give generalization of metric spaces in several ways. In 2012, S. Sedghi et al.[1] introduced the concept of new metric space which is called $S-metric\ space$ and give some of their properties and proved the existence of unique fixed point of a self map satisfying a contractive condition on complete $S-metric\ space$. Implicit relations on $S-metric\ spaces$ have been used in many articles (see[2]-[5]).Recently, S. Sedghi et al. [6] proved fixed point theorems for two mappings on complete metric spaces.

The study of fractals is an exciting area that offers research possibilities in different fields, such as computer science, engineering etc. The term fractal was first introduced by B. Mandelbrot [7] in 1975 and popularized by various mathematicians ([8]-[10]). One of the more exciting developments in the construction of fractal sets is the use of iterated function systems. In 1981, Hutchinson [8] introduced the formal definition of iterated function system and shortly after him Barnsley & Demko [9-11], introduced iterated function system. Using this concept many researchers studied IFS and obtained in the setting of appropriate spaces. In this paper we introduce a new Iterated Function System in $S-metric\ space$.

2. S-Metric Space:

Before proving our results, we first give some basic definitions and theorems concerning Iterated Function System and $S-metric\ space$.

Definition2.1 [1]: Let X be a nonempty set. A function $S: X^3 \to [0,\infty)$ is said to be an $S-metric$ on X, if for each $x, y, z, a \in X$,

(1) $S(x,y,z) \geq 0$.
(2) $S(x,y,z) = 0\ if\ and\ only\ if\ x = y = z$.
(3) $S(x,y,z) \leq S(x,x,a) + S(y,y,a) + S(z,z,a)$.

The pair (X,S) is called a $S-metric$ space.

Example 2.1[1]:

(1) Let $X = R^n$ and $\|.\|$ a norm on X.Then $S(x,y,z) = \|y + z - 2x\| + \|y - z\|$ is an $S-metric$ on X.
(2) Let $X = R^n$ and $\|.\|$ a norm on X. Then $S(x,y,z) = \|x - z\| + \|y - z\|$ is an $S-metric$ on X.
(3) Let X be a nonempty set and d be an arbitrary metric on X. Then $S(x,y,z) = d(x,z) + d(y,z)$ is an $S-metric$ on X.

Lemma2.1 [3]: Let (S,X) be a $S-metric$ space. Then, we have $S(x,x,y) = S(y,y,x),\ \forall x,y \in X$.

Definition2.2 [6] : Let (X,S) be a $S-metric$ space. For $r > 0$ and $x \in X$ we define the open ball $B_S(x,r)$ and closed ball $B_S[x,r]$ with center x and radius r as follows, respectively:

$$B_s(x,r) = \{y \in X : S(y,y,x) < r\}$$

$$B_s[x,r] = \{y \in X : S(y,y,x) \le r\}.$$

Example2.1[6]: Let $X = R$. Denote $S(x,y,z) = |y + z - 2x| + |y - z|$ for $x,y,z \in R$. Thus

$$B_s(1,2) = \{y \in R : S(y,y,x) < 2\} = \{y \in R : |y - 1| < 1\}$$

$$= \{y \in R : 0 < y < 2\} = \{0,2\}.$$

Definition2.3 [4]: Let (X,S) be an $S - metric$ space and $A \subset X$.

(1) The set A is said to be an open subset of X, if for every $x \in A$ there exists $r > 0$ such that $B_s(x,r) \subset A$.
(2) The set A is said to be $S - bounded$ if there exists $r > 0$ such that $S(x,x,y) < r$ for all $x,y \in A$.
(3) A-sequence $\{x_n\}$ in X converges to x if $S(x_n,x_n,x) \to 0$ as $n \to \infty$, that is for every $\varepsilon > 0$ there exists $n_0 \in N$ such that for $n \ge n_0, S(x_n,x_n,x) < \varepsilon$. In this case, we denote by $\lim_{n\to\infty} x_n = x$ and we say that x is the limit of $\{x_n\}$ in X.
(4) A sequence $\{x_n\}$ in X is said to be Cauchy sequence if for each $\varepsilon > 0$, there exists $n_0 \in N$ such that $S(x_n,x_n,x_m) < \varepsilon$ for each $n,m \ge n_0$.
(5) The $S - metric$ space (X,S) is said to be complete if every Cauchy sequence is convergent.
(6) Let T be the set of all $A \subset X$ with $x \in A$ and there exists $r > 0$ such that $B_s(x,r) \subset A$. Then T is a topology on X(included by the $S - metric$ S).

Definition2.4 [6]: Let (X,S) and (X',S') be two $S - metric$ spaces. A function $f : (X,S) \to (X',S')$ is said to be continuous at a point $a \in X$ if for every sequence $\{x_n\}$ in X with $S(x_n,x_n,a) \to 0, S'(f(x_n),f(x_n),f(a)) \to 0$. We say that f is continuous on X if f is continuous at every point $a \in X$.

Lemma2.2 [1]: Let (X,S) be an $S - metric\ space$. If $r > 0$ and $x \in X$, then the ball $B_s(x,r)$ is an open subset of X.

Lemma2.3 [1]: The limit of $\{x_n\}$ in $S - metric$ space (X,S) is unique.

Lemma2.4 [1]: Let (X,S) be an $S - metric$ space. Then the convergent sequence $\{x_n\}$ in X is Cauchy.

Lemma2.5 [6]: Let (X,S) be an $S - metric$ space. If there exist sequences $\{x_n\}$ and $\{y_n\}$ such that $\lim_{n\to\infty} y_n = y$, then

$$\lim_{n\to\infty} S(x_n,x_n,y_n) = S(x,x,y)$$

Lemma2.6 [6]: Let (X,S) be a $S - metric$ space and suppose that $\{x_n\}$ and $\{y_n\}$ are $S - convergent$ to x,y, respectively. Then we have

$$\lim_{n\to\infty} \sup S(x_n,z,y_n) \le S(z,z,x) + S(x,x,y).$$

In particular, if $x = y$, then we have $\lim_{n\to\infty} \sup S(x_n,z,y_n) \le S(z,z,x)$.

Definition2.5[6]: Let (X,S) be a $S - metric$ space. A map $F : X \to X$ is said to be a contraction if there exists a constant $0 \le L < 1$ such that

$$S(F(x),F(x),F(y)) \le LS(x,x,y), \qquad for\ all\ x,y \in X$$

We know that Banach contraction principle is used in theory of IFS. Banach Contraction Principle infact, not only ensures unique fixed point in complete metric space but also provides a constructive method to calculate it. With intension to study IFS in S-metric space, the validity of Banach Contraction Principle in S-metric space is required. It is already provide as below:

Theorem 2.1[1]: Let (X,S) be an complete $S - metric$ space and $F : X \to X$ be a contraction mapping with contractivity factor $'L'$, on a complete $S - metric$ space X. Then F possesses exactly one fixed point $u \in X$ and

moreover for any point $x \in X$, the sequence $\{F^n(x): n = 0,1,2,3, \ldots \ldots \ldots\}$ converges to u. That is $\lim_{n \to \infty} F^n(x) = u \; for \; each \; u \in X$.

3. Iterated Function System on S-Metric space:

To establish IFS in S-Metric space we needfollowing lemmas.

Lemma 3.1: Let $F: X \to X$ be a contraction mapping on the $S - metric\ space$ (X, S) with contractivity factor$'L'$. Then $F: H(X) \to H(X)$defined by $F(B) = \{F(x): x \in B\}$ for every $B \in H(X)$ is acontraction mapping on $(H(X), h_S)$ with contractivity factor$'L'$.

Lemma 3.2: Let (X, S) be a $S - metric$ space. Let $F_n: n = 1,2,3, \ldots \ldots, N$ be continuous mapping on $(H(X), h_S)$. Let the contractivity factor for F_n be denoted by L_n for each n. Define $W: H(X) \to H(X)$ by $W(B) = F_1(B) \cup F_2(B) \cup \ldots \ldots \ldots \cup F_N(B) = \cup_{n=1}^N F_n(B)$ for each $B \in H(X)$. Then W is a contraction mapping with contractivity factor $L = \max\{L_n: n = 1,2,3, \ldots \ldots, N\}$.

On the basis of above results, we can easily deduce the following existence theorem for IFS in a $S - metric\ space$.

Theorem 3.1: Let $\{X: (F_0), F_1, F_2, \ldots \ldots \ldots \ldots, F_N\}$, where F_0 is the condensation mapping be a $iterated\ function\ system$ with contractivity factor L. Then the transformation $W: H(X) \to H(X)$ defined by $W(B) = \cup_{n=1}^N F_n(B)$ for each $B \in H(X)$is a contraction mapping on the complete$S - metric\ space$ $(H(X), h_S)$ with contractivity factor $'L'$. Its unique fixed point, which is also called an attractor, $A \in H(X), obeys$

$$A = W(A) = \bigcup_{n=1}^N F_n(A)$$

and is given by $A = \lim_{n \to \infty} W^{on}(B) \; for\ any\ B \in H(X)$. W^{on}denotes the $n - fold\ composition\ of\ W$.

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STUDIES OF SOME FREE LIVING PROTOZOANS FROM DIFFERENT PONDS OF BHILAI (CHHATTISGARH)

[1] Dr Saman Siddiqui, [2] Saroj Singh

Department of Biotechnology and Microbiology, Rungta College of Science and Technology, Durg

ABSTRACT: Protozoan are usually single celled and heterotrophic, eukaryotic cells distributed worldwide in nature. Many genera of Protozoans are pathogen for both humans and animals. It Is necessary to established identification of species of the pathogenic protozoan from different ponds of Bhilai (C.G.).The objective of this mini review is to synthesize some free living parasitic protozoan which is pathogenic for humans as well as animals.

Key words: *Parasites, Protozoans, Pathogen, Ponds.*

INTRODUCTION:

Protozoan is a greek word stands for *Protos* means first and *zoans* means animals as the name Protos+zoans indicates, the first Phylum of Animals.Free living Protozoans are the type of micro-organisms which are single-celled (unicellular) eukaryotic with no cell wall. All the Protozoans are heterotrophic deriving nutrients from other organisms. They are often abundant in fresh , brakish,and salt water as well as aquatic or moist environments. The nutrition of all the protozoans is holozoic that is they require organic materials . They engulf food or droplets through sort of temporary mouth. Most protest disease in human are caused by Protozoans. More than 65000 species have been described, most of them are Free living Pathogenic Parasites. Eventually ,They are found in almost very possible habitat. The organelles of free living protozoans has similar function to that of organs of higher animals. Plasmamembrane is enclosed by cytoplasm and also covers the locomotary organs like pseudopodia, cilia, flagella.

MATERIAL AND METHODS:

The water samples were collected from different bodies of Bhilai City during the Academic year(2018-2019).Water samples were collected in plastic water bottles and care was taken that taken water is collected from different areas of different Ponds. Water sample were collected in early morning because temperature affects the abundance of Protozoans in water. A drop of methyl cellulose is added to water sample to stop the movement of protozoans then, a drop of water sample is spread in slide andcover with cover sleep and observe under compound microscope. Identification is done with the presence of Locomotors organs (cilia,flagella,pseudopodia).

RESULT AND DISCUSSION:

The abundance and distribution of Protozoans of Pond water is guided like to other microbial communities, where it shows a great variability from time to time ,place to place. The condition of Environment affect the growth and multiplication of Protozoans. The present work covers the presence of free living Pathogenic protozoan's from water Samples collected from Bhilai (C.G.). During the studies total number of 26 species of Protozoan's is collected which is pathogenic for humans as well as animals ,and causes many diseases like Diarrhea, ascariasis, filariasis etc. During the year 2018-2019 total 40 water samples were collected of which only 27 samples were found to be positive for Pathogenic Protozoans during the month of august to December. In the month of April, May, June and July there was no protozoan recorded from the water sample which is collected during the month hence the presence of protozoan reaches to zero.

NAME OF SPECIES	NO OF SPECIES
PARAMOECIUM	17
VORTICELLA	01
PLASMODIUM	04
VOLVOX	04

PLASMODIUM VIVEX

PARAMOECIUM CAUDATUM

VORTICELLA

VOLVOX

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"Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR/Cas9): A Review"

PREETI VERMA

Department of Biotechnology, St. Thomas College, Bhilai (CG).

Email ID - preetimadh26@gmail.com

Abstract: CRISPR/Cas-9 is Clustered Regularly Interspaced Short Palindromic Repeats. It is the adaptive prokaryotic immune system mechanism i.e., CRISPR associated system, Cas) In 21th century, one of the best way to manipulate and change DNA is CRISPR/Cas9 technique. It is revolutionized molecular biology method which allows performing targeted alternation in the genome and used in all types of genetic manipulation like to generate knock-in, knock-out and point mutation. It is also used to targeting genomic locus, particular loci can be highlighted imaged by using CRISPR mediated FISH. The simplicity and flexibility of the CRISPR/Cas9 site-specific editing tool has used in many biological research areas including development of model cell lines, Gene therapy, discovering mechanisms of disease, drug discovery, development of transgene animals and plants, identifying disease targets and transcriptional modulation.

Index Terms- CRISPR, Cas-9, Gene manipulation, Editing tool.

Introduction:

Many bacterial clustered regularly interspaced short palindromic repeats (CRISPR)–CRISPR-associated (Cas) systems are recently used in Genome engineering. The prototypical CRISPR-Cas9 system carries type II CRISPR-Cas9 operon from *Streptococcus pyogenes*. CRISPR- Cas9 defend against invading phages and conjugative plasmids by introducing site-specific double-stranded breaks in target DNA by using dual RNA–guided DNA endonuclease Cas9. Two important things are strictly required for target recognition i.e., the presence of a short protospacer adjacent motif (PAM) flanking the target site and formation of R-loop. Complementary base pairing between the guide RNA and target DNA, Cas9–DNA interactions, and associated conformational changes are the reason of strand scission. CRISPR–Cas9 used as an RNA-programmable DNA targeting and editing platform, it is simplified by a synthetic single-guide RNA (sgRNA) mimicking the natural dual *trans*-activating CRISPR RNA (tracrRNA)–CRISPR RNA (crRNA) structure. In this study, the basic aim is to provide an in-depth mechanistic and structural understanding of Cas9-mediated RNA-guided DNA targeting and cleavage. Through this biochemical and structural studies provide a framework for rational engineering which is aimed against genetic diseases with different therapies like altering catalytic function, guide RNA specificity, PAM requirements and reducing off-target activity for the development of Cas9.

`CRISPR associated protein 9 system is a powerful RNA-guided DNA targeting platform for epigenetic modulation, genome editing, transcriptional perturbation and genome imaging. By using this technology or utilizing a fusion protein of nuclease- deficient Cas9 and effector domain, we can manipulate any genomic sequence specified by a short stretch of guide RNA that can lead various process like allowing elucidation of gene function involved in disease development and progressions, inactivation of activated oncogenes or activation of deactivated cancer suppressor genes and correction of disease-causing mutations.
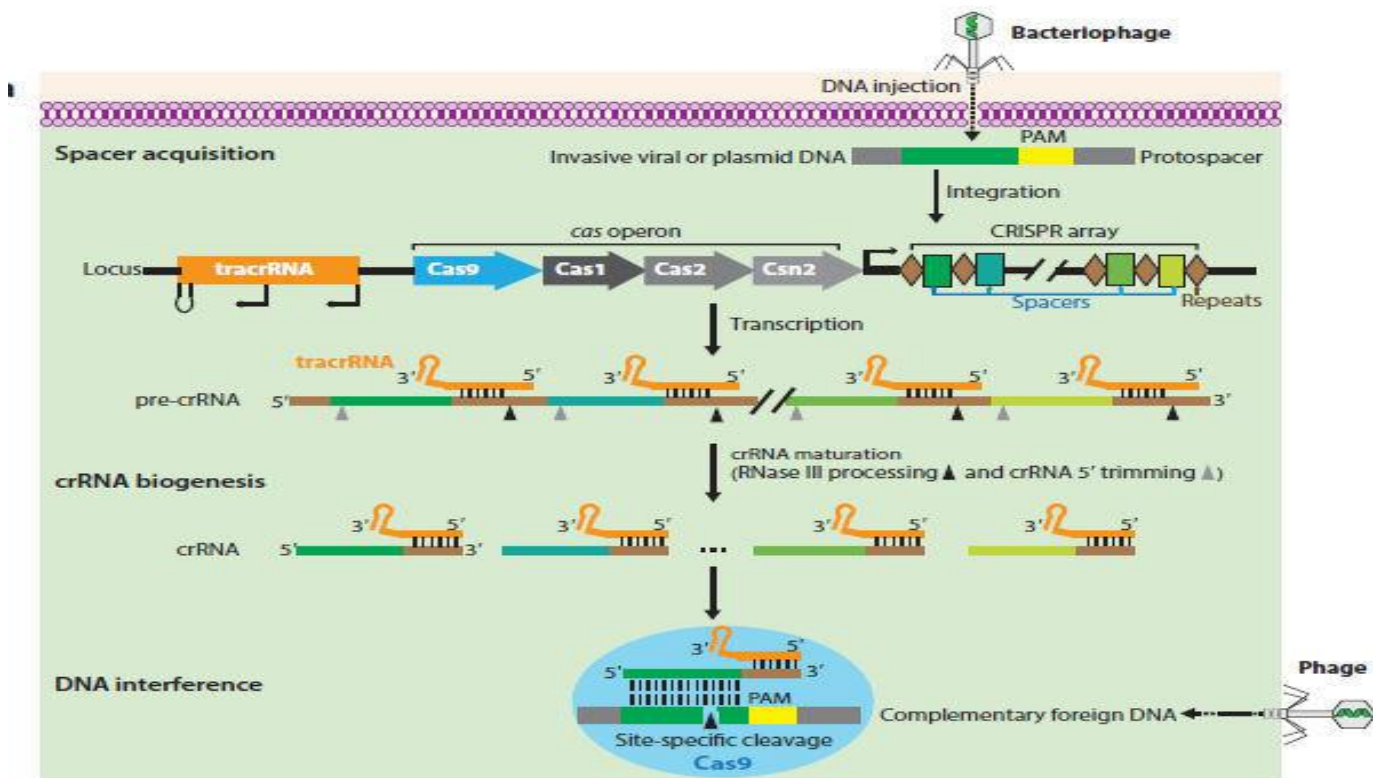
Figure1: CRISPR–Cas9-mediated DNA interference in bacterial adaptive immunity

Source of Figure1: Jiang F and Doudna JA., 2017. CRISPR-Cas Structures and Mechanisms. Annu. Rev. Biophys. 46:505-29

CRISPR Cas9 Structure and Mechanism- During the immunization process, bacteriophage genetic material exposure to invading genetic elements, foreign DNA in the form of short fragments are integrated into the host chromosome as new spacers through CRISPR repeat-spacer array, thereby this prior infection is memorized as a genetic record by the organism which provide prevention against the infection that enables to prevent future invasion of the same invader. Then transcription of the CRISPR array creates transcript and this precursor-CRISPR transcript taken in enzymatic processing through endonucleolytic cleavage which creates short mature CRISPR RNAs (crRNAs).spacer is present at the 5 end, a short rna segment that complements a sequence from a foreign genetic element and piece of CRISPR repeat sequence is the present at the 3 end.

Sequence-specific destruction of invading DNA or RNA triggers the hybridization between the crRNA spacer and a complementary foreign target sequence (protospacer) with the help of Cas nucleases upon a second infection. Destroy matching sequences in foreign nucleic acids and assembly of mature crRNA with Cas proteins into crRNA-effector complexes to interrogate DNA targets are the main features of CRISPR-Cas systems. PAM is a short conserved sequence motif (2-5 bp) located proximity close to the crRNA targeted sequence on the invading DNA. The main role of this sequence is in target DNA selection and degradation in most CRISPR-Cas systems.

Protein encoded by prokaryotic CRISPR-Cas loci which act against infectious viruses and plasmids that function as an adaptive immune system. Cas nucleases and small RNA guides accelerate the immunity and they specify a cleavage site within the genome of the invader. In type II CRISPR-Cas systems, DNA is cleaved by RNA-guided Cas9. Cas9 can be use to create double-strand DNA breaks in the genomes of a variety of organisms, from bacteria to human cells. Repair of Cas9 lesions can lead to the introduction of specific nucleotide substitutions or indel mutations are created by homologous recombination or nonhomologous end joining mechanisms respectively. Furthermore, regulation of endogenous gene expression and to label genomic loci in living cells has been done by method a nuclease-null Cas9. Cas9 mediated methods like targeted genome editing and gene regulation are easy to program, scale and multiplex, allowing researchers to create link between genetic and phenotypic variation. The most interesting applications of Cas9 are in basic biology, biotechnology, biomedical research field, translational medicine, synthetic biology and other fields.

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Limitation of Contactless Credit/Debit Cards

Suresh Kumar Thakur

Assistant Professor , Department of Computer Science
Indira Gandhi Govt Arts & Comm. Post Graduate College, Vaishali Nagar, Bhilai, India
Email -   sur25011986@gmail.com

Abstract: *This paper estimates the shortcoming of contactless payment mode offer by some Credit/Debit cards. Most banking facilities promote ATM Cards with Wi-Fi symbol. Some ATM cards (Debit and Credit cards) are now available with an emblem that looks like a Wi-Fi sign. This symbol shows that card has a Contactless payment characteristic. The advantage of a Contactless payment characteristic is that the payment can be made by just tapping devoid of swiping. This Card has Near Field Communication chip, which can be brought close together at a merchant terminal without touching the device for payments. When buyer tap card near the contact signals, concern payment goes for authorization. A contactless card allows communication between NFC-enabled objects at a minimum distance of 4 centimeters. While most banking facilities promote it as safe, there are many cases theft that have been reported. It is possible where one can hold a POS machine and receiving payments from the nearby contactless cards with just tapping it without even the owners knowing it. As creepy as it seems, the thieves can go to any level. Most of the banks claim that this way of payment is very secure because the card needs to be very close to the payment machine. However, that will not be a problem. If card gets lost, anyone can use it for making payments up to ` 2000 without enter the pin. The amount is not that much but one can carry out such transactions number of times, thus increasing the amount of theft. This paper is trying to give the answer those contactless featured cards having some disadvantage that cannot be ignored.*

Key Words: ATM, Contactless, NFC, POS.

INTRODUCTION: Contactless ATM cards have become popular in many parts of the world, and even though India got this technology four years ago, consumers have not really affectionate to it. However, the likes of Visa and Master card are at the forefront of changing this scenario, with experts confident that NFC-based card payments are the future. It is not like there is shortage of places where you can pay with these cards, but the basic issue is educating the customer, and also the seller as often both are not aware of the feature.

Contactless payment systems are credit cards and debit cards, key fobs, smart cards, or other devices, including smart phones and other mobile devices, that use radio-frequency identification (RFID) or near field communication (NFC, e.g. Samsung Pay, Apple Pay, Google Pay, Fitbit Pay, or any bank mobile application that supports contactless) for making secure payments. The embedded integrated circuit chip and antenna enable consumers to wave their card, fob, or handheld device over a reader at the point of sale terminal. Contactless payments are made in close physical proximity, unlike mobile payments which use broad-area cellular or WiFi networks and do not involve close physical proximity.

Some suppliers claim that transactions can be almost twice as fast as a conventional cash, credit, or debit card purchase. Because no signature or PIN verification is typically required, contactless purchases are typically limited to small value sales. Lack of authentication provides a window during which fraudulent purchases can be made while the card owner is unaware of the card's loss.[1]

When chips were introduced in debit and credit cards, it was a big safety upgrade over paying by swiping the magnetic strip. Now, contactless payment is slowly beginning to gain popularity and it takes security and ease of payment to the next level. Ease of payment is because the contactless card need not be inserted in the slot of the point of sale terminal devices. In PoS device all the customer needs to do is take the card near the reading device and the payment is done. The whole payment process takes about some seconds. The Reserve Bank of India has ruled that for transactions below Rs 2,000, no PIN has to be entered.

HOW CONTACTLESS PAYMENT SYSTEM WORKS?

A contactless card is a chip card that also has technology embedded in it that lets you pay over a secure radio interface. Contactless credit cards have a chip inside them that emits radio waves. An antenna is built into the plastic to secure the connection with a contactless reader. This is known as radio frequency identification (RFID) technology Contactless cards have a payment app all built into the card. An transmitter picks up when it is close to a reader and allows information to be transmitted to the point-of-sale terminal." You have to be within close proximity roughly 4 centimeter to the contactless enabled credit/debit card terminal for the radio antenna to pick up your card's signal. Contactless cards are called dual interface cards because they contain the now standard EMV chip and contactless technology. This way, consumers can use either method depending on what interface merchants are using. To

determine if a merchant is contactless-enabled, just look for the contactless symbol at checkout, your card, too, will have the wave's symbol on the front.

To pay for something with a contactless credit card, you hold the card near a payment terminal (known as an RFID reader) and it picks up the signal, communicates with the card and processes the payment. The payment terminal will say if the payment was successful or not. Sometimes it doesn't work, and you'll need to use your pin instead. Mobile phones and other electronic devices use something called near-field communication (NFC) to transmit data – which is based on the technology used in RFID.

Fig.1 Contactless Payment process

Contactless Payment system principle (Working principle of RFID System):
Three Main Components of a RFID System

+ A RFID tag: It consists of a silicon microchip attached to a small antenna and mounted on a substrate and encapsulated in different materials like plastic or glass veil and with an adhesive on the back side to be attached to objects.
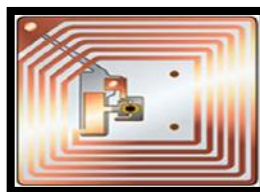
Fig. 2 An RFID Tag

+ A reader: It consists of a scanner with antennas to transmit and receive signals and is responsible for communication with the tag and receives the information from the tag.

Fig. 3 An RFID Reader

+ A Processor or a Controller: It can be a host computer with a Microprocessor or a microcontroller which receives the reader input and process the data.
Two Types of RFID Systems:

+ Active RFID system: These are systems where the tag has its own power source like any external power supply unit or a battery. The only constraint being the life time of the power devices. These systems can be used for larger distances and to track high value goods like vehicles.

+ Passive RFID system: These are systems where the tag gets power through the transfer of power from a reader antenna to the tag antenna. They are used for short range transmission.

Here we are mostly concerned with the passive RFID system as it is most widely used in regular applications like in retail market organizations[2]

In RFID system using Induction coupling approach the RFID tag gets power from the reader through inductive coupling method. The reader consists of a coil connected to an AC supply such that a magnetic field is formed around it. The tag coil is placed in the vicinity of the reader coil and an electromotive force is induced it by the virtue of Faraday's law of induction. The EMF causes a flow of current in the coil, thus producing a magnetic field around it. By the virtue of Lenz law, the magnetic field of the tag coil opposes the reader's magnetic field and there will be a subsequent increase in the current through the reader coil. The reader intercepts this as the load information. This

system is suitable for very short distance communication. The AC voltage appearing across the tag coil is converted to DC using rectifier and filter arrangement.[2]
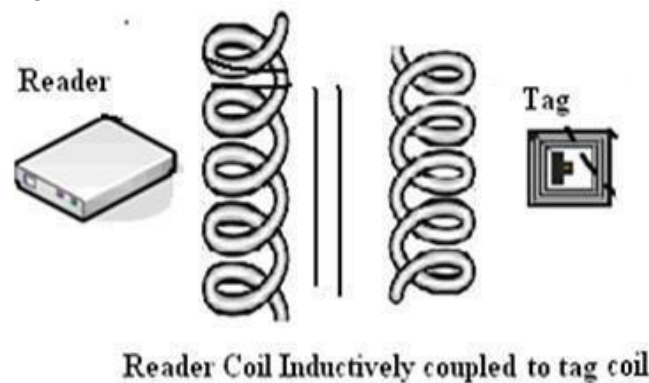

Fig 4 Passive RFID using Inductive Coupling

In A Passive RFID system using EM wave propagation method The antenna present in the reader transmits electromagnetic waves which are received by the antenna present in the tag as potential difference across the dipole. This voltage is rectified and filtered to get the DC power. The receiver antenna is kept at different impedance which causes it to reflect a part of the received signal. This reflected signal is received by the reader and monitored accordingly.
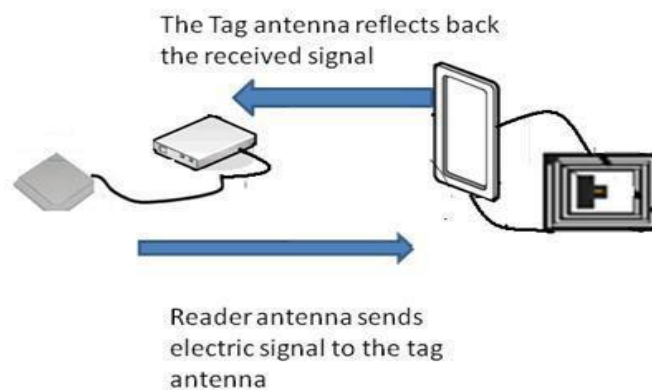

Fig. 5 Passive RFID using EM-wave transmission

DISCUSSION:

Contactless cards are considered as safe as chip cards. There are several layers of security that keep the customer protected from racket. Additionally, the contactless payment device can process only one transaction at a time. The card does not have to be given to the merchant. The customer has complete control of the card. Doubts were raised if a thief could steal from your card using a card reader or POS machine. But in contactless payment technology, the card and reading device should be about four centimeter away from each other at the most.

Contactless debit and credit cards are embedded with a chip that produces radio waves. These waves then connect with the reader device at the point of sale and the transaction is completed. This is based on the radio frequency identification (RFID) technology. The concept of contactless payments is yet to catch up in India. The concept is on the rise and more merchants are taking up contactless payment devices in their stores. Banks have also been issuing replacement debit and credit cards with contactless payment features to their customers. Major Banks are also putting up list of stores that accept payment through the contactless method. As the technology is still at the budding stage in India, one cannot really be sure of security. However, going by the way the technology works and the encryption, it should be pretty safe to use.

ANALYSIS:

This section will look closely at the security and person data threats involved when using a contactless bank card to pay for goods at the checkout. There are many ways to intercept a signal being emitted from these bank cards, one being spying. These contactless bank cards are fitted with a wireless RFID tag and are usually a unique identifier. During a transaction, there is a risk that the communication between the tag and reader could be snooped. This can happen when an attacker intercepts data using basic equipment. Since almost all RFID systems use clear text communication, cause of tag memory capacity or costs, eavesdropping is a very effective way for an attacker to obtain the required information from these RFID tags. The apparent information collected during this kind of attack could

have serious consequences for the card owner and the banks who the customer deals with. The data collected from eavesdropping can be saved for further analysis and could be used for cloning tags in the future.[3]

- Cloning: There are other methods where an attacker could potentially collect sensitive information from these cards. Cloning been one, as previously mentioned eavesdropping could be useful as the attacker can store the data and use it later to clone a legitimate RFID tag. Cloning is referred to copying data from a legitimate tag to a new tag owned by the attacker.

- Spoofing: Spoofing is another form an attacker can use to copy tag data. Although similar to cloning it is different as spoofing is defined as duplicating tag data and transmitting it to a reader. A very simple form of spoofing would be to replace a price sticker with a cheaper one in your local. The information collected from the legitimate tag is transmitted to the reader from an alternative tag that is not the original RFID tag.

- Jamming: Jamming being another method an attacker could use to obtain personal data. Jamming refers to deliberately disturbing the air interface between a tag and reader which in theory is attacking the communication between both the devices. This attack can occur by using powerful transmitters which paralyses the communication of the RFID tag and generating a frequency noise the same as the system been used [4].

- Wireless Copying: Wireless copying being the most recent development with contactless bank card security and should be a warning to the consumer. The attacker with a modified smart phone is able to collect personal data by just standing next the victim. Details obtained are the account name, account number expiry date as well as the last ten transactions can all be viewed using these modified smart phones. The attacker does this by placing the smart phone within a short range of the victims pocket and retrieves the data with-out the victim even knowing they were targeted. The modifications to the smart phone can be bought online for as little as £30 with the risk to millions of bank card owners having their private data read by these phones, [5].

- Contactless Bank Cards having the convenience of using a contactless bank card to pay for items is a major advancement in NFC technology. But with new technologies come risks and risks to sensitive banking detailed information been leaked. The public will certainly want a closer examination off these cards to make them more secure. It is clear there are communication risks when using these cards and using wireless communication systems only add to this. The threats highlighted so far could frustrate consumers more and could potentially find it difficult to trust this technology.

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Customer Perception towards Net Banking and Mobile Banking
(With Special reference to Dena bank of Raipur City)

Nidhi Goenka
Research scholar
Pt.R.S.S.U
Raipur (C.G.)

Dr. S. S. Khanuja
Ex-Principal
Durga Mahavidyalaya
Raipur (C.G.)

Introduction :

As the technological changes took place banks have been successfully improving their operations products and services. Net banking and mobile banking are becoming most popular and potential mode of banking in Chhattisgarh. Through net and mobile banking customers can conduct their transactions electronically. Today many people wants to access their accounts at anytime from anywhere 24*7. Customers are likely to do transactions through modern banking techniques for making their transactions convenient, easy at less time and in low cost. The current study focuses on the customers of Dena bank. Through this paper author wants to explore the major reasons because of which customers prefer net banking and mobile banking services provided by Dena bank in Raipur city. As all the customers of net and mobile banking will be soon access their banking transactions online.

An overview of Dena Bank :

As the Dena bank was founded on 26th May, 1938 by the family of Devkaran Nanjee. After the name of Devkaran Nanjee the name of Dena bank came into existence. It is one of the public sector banks which were nationalized in 1969 along with 13 major banks under the banking company act 1970. As now Dena bank is being amalgamated with Bank of Baroda in April 2019. After core banking in Chhattisgarh in 2009 Dena bank had also adoped the modern banking techniques. By facing banking challenges and opportunities it had started net and mobile banking a user friendly services to the customers.

Raipur District:

Raipur is the capital city of Chhattisgarh state and a district of Chhattisgarh. This district is enriched with mineral resources and wit many wildlife sanctuaries. Its population according to 2011 census is 40 lakhs. It is most populous district of (C.G). about 42% of area is being occupied for agriculture land. Among 40 lakhs population about 71.04% are literarte population.

Population Table of Raipur District

Heads	
Total	40,63,872
Male	20,48,356
Female	20,13,304
Sex Ratio	983
Density	310
Decade Growth Rate	34.65
Literacy Rate of Male	86.50
Literacy Rate of Female	66.21

Review of Literature:

Literature based survey was primarily based on research journals, articles, available in both offline and online. Khalid Zaman (2011), in his research "Customer Perception towards online banking services: Empirical Evidence from Pakistan, as the consumers of Pakistan are more quickly grasping modern technological services. Internet banking is exploring and customers are operating improved and successful services for this operation.

Nirala Chandrawati (2015), in her research "Customer Perception towards Mobile- banking in Chhattisgarh", customers of C.G have mobile phones and are more comfortable to operate and wants to use the banking facility but they are not much aware about its operation. Due to technological problem and security issues now also customers prefer traditional banking methods for transaction.

Kalaiyarasi.P (2016) in his study," A customer perception towards mobile banking services" that customers are more attentive towards new innovation. As more and more customers are adopting the mobile banking transactions.

Veena K.P,Suheel (2016), in their research "Customer Perception towards E-banking Services: A Study with reference to Vijay bank, Mysuru City", studied that by reducing cost the bank is trying to provide quick and easy E-banking services to customers.

Saluja Rajni (2018) in her study "Customer Perception towards e-banking", customers are equally satisfied with e-banking facilities provided by private as well as public bank. But there are some barriers for customers which are like major challenges for banks.

Objective of the study:
There are some major objectives for this study:
➢ To study about the customer perception towards net and mobile banking.
➢ To know about barriers in usage of both net as well as mobile banking the services.
➢ To analyze the customer satisfaction level towards Dena bank services.
➢ To know about the motivational factors influencing for adoption of the facility.
➢ To light on the findings and suggestions of this paper.

Limitations of the Study:-
❖ The details of the study are mainly focuses on customer within a locality, which students as also a part of customers.
❖ The survey is comprised with small sample population.
❖ Study is based on descriptive research due to this reason sufficient conclusion not possible.

Research Methodology:
The data used for this current study is based on primary as well as secondary information provided by Dena bank customer. Primary data is being collected from the customers of Dena bank of Raipur city. With the help of questionnaire survey was conducted. For collection of information a sample unit of 100 customers is taken in which random sample is considered including both male as well as female customers. Secondary data information is being collected through related published journals, books, periodicals, reports and from various websites.

Net banking and Mobile banking:-
Net banking and mobile banking is that virtual part of banking in which all the banking transactions are done through electronically. This service is all time available facility to each and every customers of bank. Customer can retrieve their account information from anywhere and at everywhere. Today every age group customers like to go towards online. This banking helps customers to pay all types of bill in shorter time. Even though customer can recharge their mobile within a span of time.

Some of the popular services under Net banking and Mobile banking:
➢ Automated teller machine
➢ Debit cards
➢ Credit cards
➢ Smart cards
➢ NEFT & RTGS
➢ Mobile wallet
➢ SMS
➢ One click payment facility and many more.

Analysis and Interpretation:
As customers are the respondents for this survey, a sample of 100 customers are taken for valid response which is representing the targeted population of 1000 were received in which 50 male and 50 female customers were participated in the survey. Out of 100 responses , 45 were earning income below Rs.30000, 35 were earning between Rs.30000 and Rs.50000 and 20 were earning income above Rs.50000.
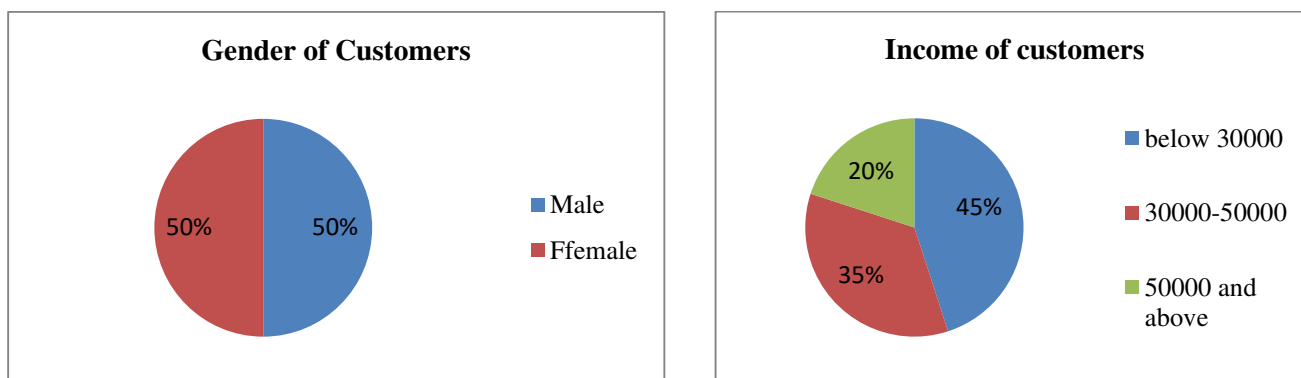
Figure -1 shows Gender of customers and income of customers

51 customers were undergraduates while 49 customers are qualified above graduation, 59 customers have their bank account in Dena bank, only 35 customers had bank account in Dena as well as in other bank and 6 customers did not ready to provide information.
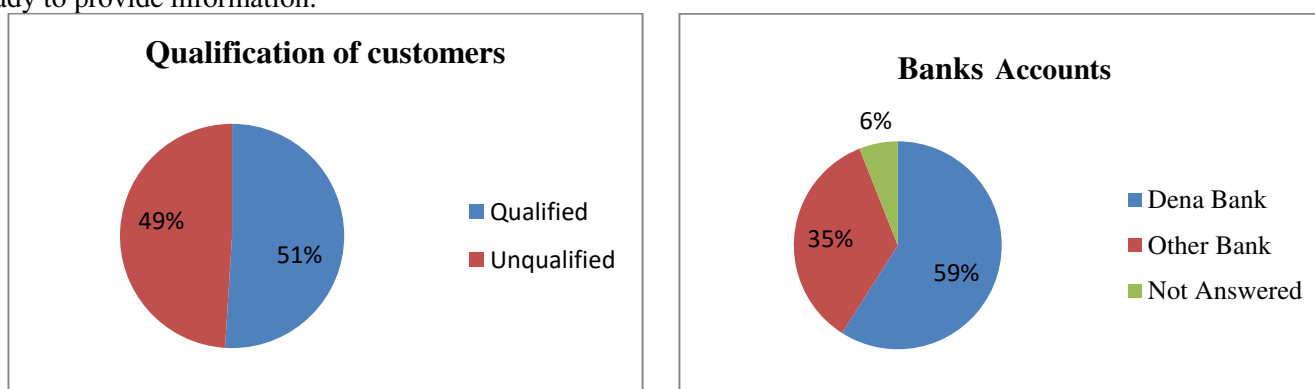

Figure -2 shows qualifications and customers having accounts in banks

Resulting:

The customers were asked questions for preferring the banking method through ATM, net banking, mobile banking, branch banking. Out of 100 customers as respondents, 35 customers prefer ATM as method of banking transaction. 45 customers consider preferring net banking method for banking transaction, where as 20 customers considers branch banking method for banking transactions. Through survey as results came that net banking is more popular than other all banking.
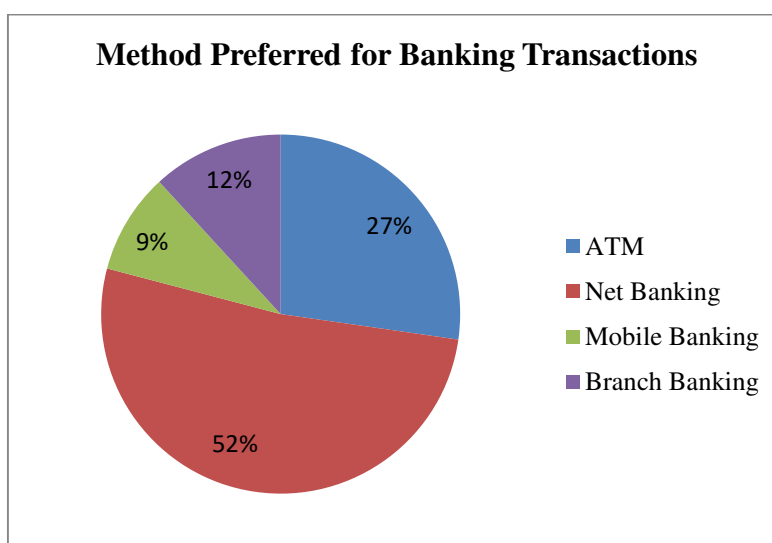

Figure-3

A. Customers Uses ATM Services:

About 65 customers regularly uses ATM services for checking mini-statement of their accounts, 05 rarely uses ATM services, 15 never uses , 10 are occasionally using and 05 customers quite often uses ATM services, clear from figure -04.

Mini-Statement	Frequency
Regularly	65
Rarely	05
Never	15
Occasionally	10
Quite Often	5

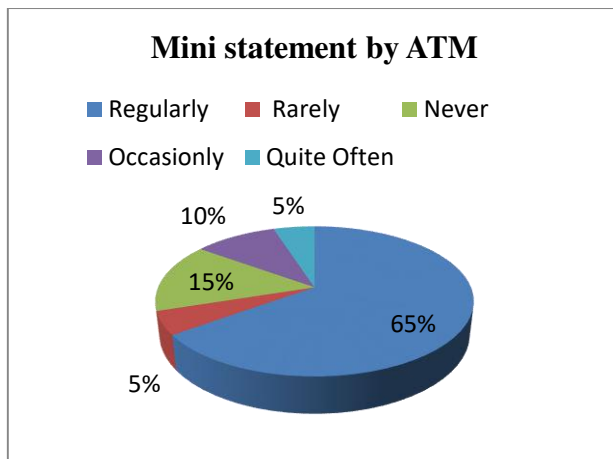**Table1 Customers use ATM for mini-statement**

Figure -4

About 50 customers regularly uses ATM services for money transfer to another accounts, 08 rarely uses ATM services, 30 never uses , 12 are occasionally using and 08 customers quite often uses ATM services, clear from figure -05.

For Money Transfer	Frequency
Regularly	50
Rarely	8
Never	30
Occasionally	12
Quite Often	8

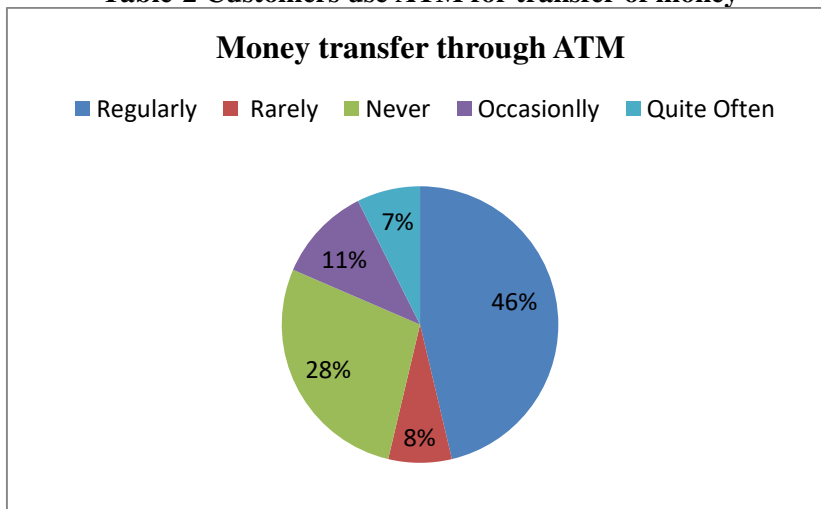**Table-2 Customers use ATM for transfer of money**

Figure -5

About 65 customers regularly uses ATM services for cash withdrawals from bank, 05 rarely uses ATM services, 15 never uses , 05 are occasionally using and 10 customers quite often uses ATM services, clear from figure -06.

Withdrawal of cash	Frequency
Regularly	65
Rarely	5
Never	15
Occasionally	5
Quite Often	10

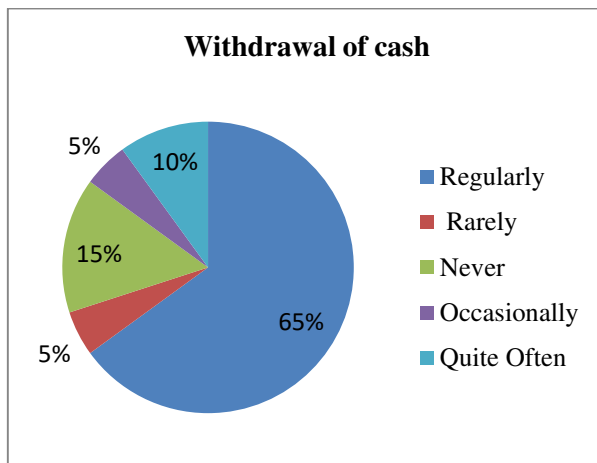**Table-3 Customers using ATM for cash withdrawals**

Figure-6

B. Customers Uses Net Banking Services:

55 customer out of 100 customers uses net banking for checking their account balance regularly, 10 customers rarely uses it, 20 customers never used, 10 occasionally uses it, 05 often used it.

Checking Balance	Frequency
Regularly	55
Rarely	10
Never	20
Occasionally	10
Quite Often	5

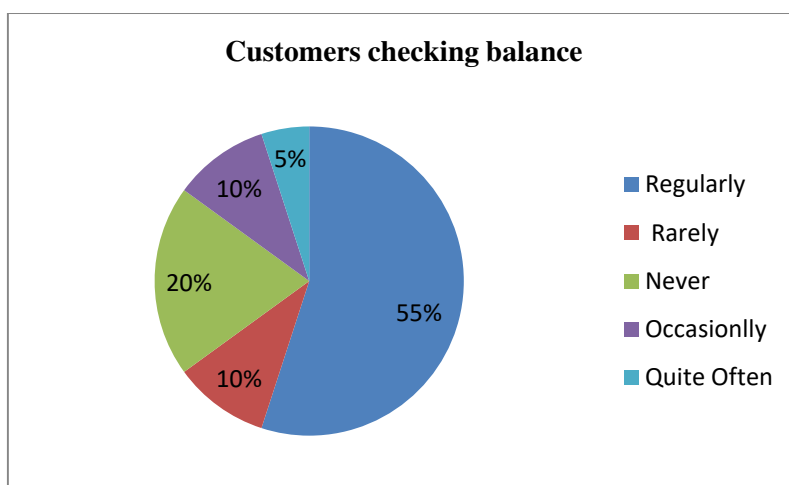**Table -4 Customers using net banking for checking balance**

Figure-7

30 customer out of 100 customers uses net banking for Account statement regularly, 20 customers rarely uses it, 20 customers never used, 15 occasionally uses it, 15 often used it.

Account Statement	Frequency
Regularly	30
Rarely	20
Never	20
Occasionally	15
Quite Often	15

Table-5 Customers using net banking for account statement

Figure-8

36 customer out of 100 customers uses net banking for money transfer regularly, 27 customers rarely uses it, 18 customers never used, 12 occasionally uses it, 07often used it.

Money Transfer	Frequency
Regularly	36
Rarely	27
Never	18
Occasionally	12
Quite often	7

Table-6 Customers using net banking for money transfer
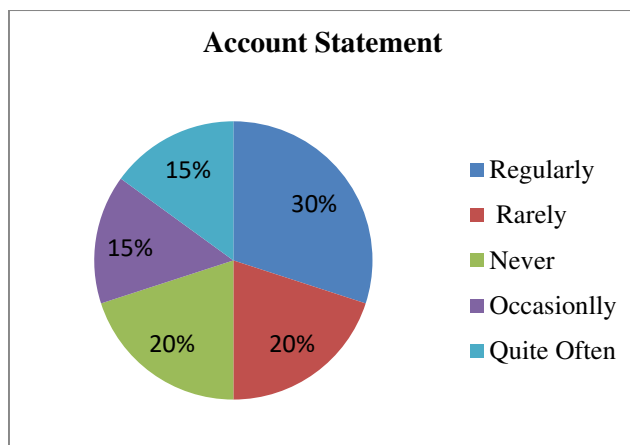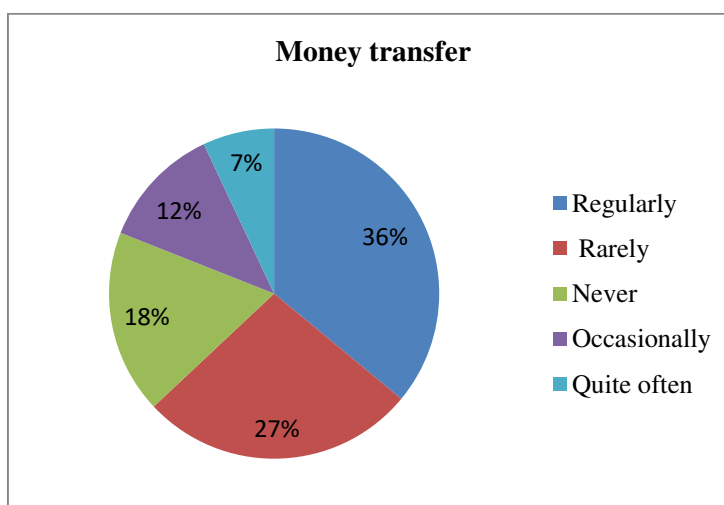

Figure-9

26 customer out of 100 customers uses net banking for online shopping regularly, 36 customers rarely uses it, 8 customers never used, 20 occasionally uses it, 10 often used it.

Shopping Online	Frequency
Regularly	26
Rarely	36
Never	8
Occasionally	20
Quite Often	10

Table-6 Customers using Net banking for online shopping
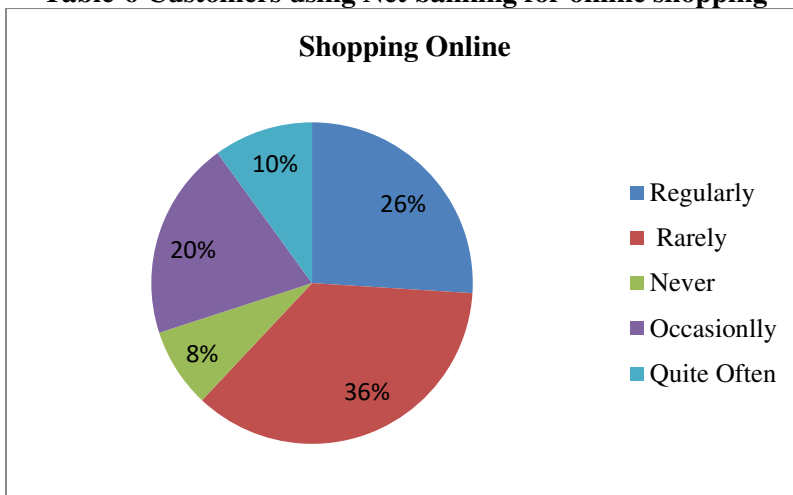
Figure-10

C. Customer Uses Mobile Banking Services:

15 customers out of 100 customers are regularly using mobile banking for checking mini-statement of account, 25 rarely uses it, 45 customers never used, 10 were using occasionally using it, 05 quite often.

Mini-Statement	Frequency
Regularly	15
Rarely	25
Never	45
Occasionally	10
Quite Often	5

Table-7 Customers using mobile banking for mini-statement
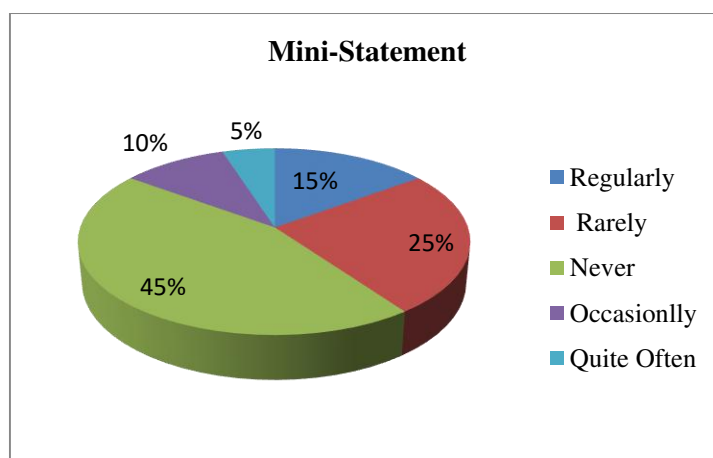
Figure-11

20 customers out of 100 customers are regularly using mobile banking for transferring funds from one account to another, 35 rarely uses it, 35 customers never used, 05 were using occasionally using it, 05 quite often.

Fund Transfer	Frequency
Regularly	20
Rarely	35
Never	35
Occasionally	5
Quite Often	5

Table -8 Customers using mobile banking for fund transfer
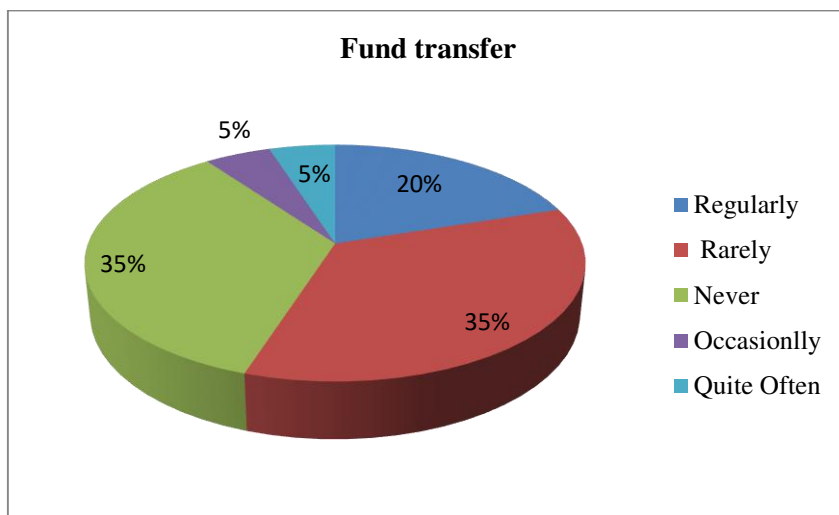
Figure-12

10 customers out of 100 customers are regularly using mobile banking for making payment through mobile wallet, 45 rarely uses it, 35 customers never used, 05 were using occasionally using it, 05 quite often**.**

Payment through Mobile Wallet	Frequency
Regularly	10
Rarely	45
Never	35
Occasionally	5
Quite Often	5

Table-9 Customers using mobile wallet for payments

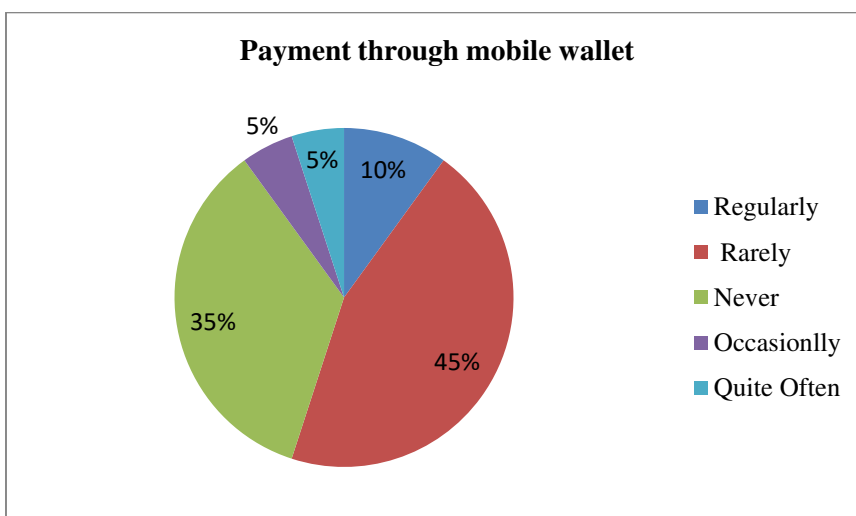**Figure-13**

10 customers out of 100 customers are regularly using mobile banking for tickets reservation, 15 rarely uses it, 45 customers never used, 25 were using occasionally using it, 05 quite often**.**

Ticket Reservation	Frequency
Regularly	10
Rarely	15
Never	45
Occasionally	25
Quite Often	5

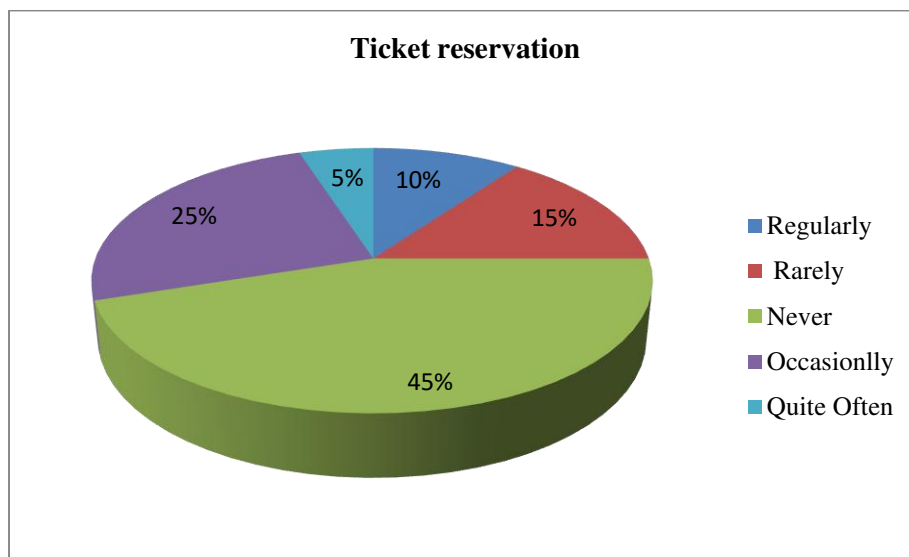**Table-10 Customers using mobile banking for ticket reservation**

Figure-14

Challenges in adopting Net and Mobile banking:-

Net and mobile banking is new which become mandatory rather than an exception for the banks. While this banking provides a convenient and easy for customers but the banks faces some issues and challenges for it. Some of this been addressed below:-

i) **Security Issues:-**

The most prominent challenge i.e. being faced by banks security issue. In this banking process there are many fraudulent activities are done like phishing, spyware, spamming, internet theft etc.

ii) **Technical Issues:-**

As this banking process is totally based on technology. The problems arises regarding websites, cards blocked, password forget by customers, jamming problem due to lots of rush for transactions on websites.

iii) **Privacy Issues:-**

Customers have been scared regarding their personal information is being shared with other member by bank as they are marketing people.

iv) **Awareness among customers:-**

Lots of customers in Raipur is still fearful for using net and mobile banking services. So, it is big challenge for banks to provide this facility to customers. Though many customers are shifting towards the use of ATMs and other net and mobile banking techniques.

Findings:

As customers preferences are changing which makes banks to move towards new technologies for adopting markets challenges rather than using old transaction techniques for attracting their customers. The time is changing Dena bank is trying to meet the customer's needs and attract them towards their products and services and bank is also trying to solve their problems.

Conclusions:

Core banking solutions are permitting Dena bank to extend its beneficial services towards the customers. They are trying to provide all the beneficial services to customers under a single roof through all possible channels. Dena bank is providing multiple opportunities to use modern banking techniques. As from the above we came to know that till now also many of the customers a likely to use branch banking or traditional banking technique due to lack of awareness and security issue.

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Literature Survey on Trends in Educational Data Mining

Dr. Gyanesh Shrivastava[1] ,   Vivek Prakash Sahu[2]
[1]Associate Professor, School of IT, MATS University, Raipur, Chhattisgarh, India
[2]Research Scholar, School of IT, MATS University, Raipur, Chhattisgarh, India

Abstract: In 21st century business tycoons, magazines consider data as new oil which will give new dimension to the human life. Even data analysis and extracting hidden information become very inevitable in modern scenario. Computers with strong algorithmic computation and capability to store data give a new energy to extraction of information from the data.
Data mining with supervised learning, unsupervised learning and association rule analysis find that information which is not easily extracted from the data by human. These information makes a lot sense if they are identified before anything wrong happen. So the data mining give an alert for any situation.
Educational domain faces numerous problem while dealing with information. Researchers address these problems using data mining tools. The field which specifically discuss the analysis of educational data is termed as educational data mining. This research paper discusses use of data mining tools used by researcher in educational domain.

Index Terms: Educational data mining, Information retrieval, Learning environment.

I. INTRODUCTION:

Technological revolution brought an important turn in human life. Now people think to store, process etc. using technological assistance. Knowledge inferring is one of those activity. Human mind is no doubt has strong inferring capability but it varies from human to human and second more complex data study is not a cup of tea because of data dimensionality, size and speed.

Data in only source of information which makes human knowledgeable and wise. Earlier computer professionals were fascinated for storing of the data. Later, queries introduce to fetch valuable data stored in the data storage. But that was not enough to extract information, hence data mining techniques used in the various domains to extract knowledge.

Data mining with its wide variety of algorithm for classification. clustering and association mine the data to provide that information which is not understandable by human mind easily.

In this paper a literature survey is presented on use of data mining techniques to study the data of educational components.

II. LITERATURE REVIEW:

Educational data mining becomes famous among the researcher and they applied it to understand the educational domain data. Following are the literature which discusses the use of data ming in the field of education.

Madaio M. et. al [25], outline relate degree approach for compatibility location in peer mentoring, exploitation fleeting affiliation rules gained from nonverbal, social, and on-errand verbal practices. They prepare a stacked outfit order demonstrate on those affiliation controls and assess capacity to reliably anticipate compatibility exploitation multimodal conduct data. The incorporate compatibility discovery into agreeable learning underpins and clever tutoring systems.

Fang Y. et. al [26], contemplated student diligence in on-line learning situations at the large-scale level. Clustering investigation known three examples of steadiness related learning practices: (1) High determination and uncommon subject moving; (2) Low tirelessness and continuous theme moving; and (3) Moderate diligence and direct point moving. They tend to more investigated the relationship amongst constancy and instructional exercise activity. No vital varieties were discovered between academic achievement and the different learning methods and patterns.

Dong Y. et.al [27], specified interesting methodology for building up extra refined and right student models from learner data gathered from Open ended Learning Environments (OELEs). OELEs offer students elective in any way they are developing answers for issues and show a spread of learning practices in such conditions. Building right models from confined amount of understudy data is troublesome; to deal with this they build up a method that utilizations Monte Carlo Tree Search methodologies to zest up the underlying arrangement of understudy activity groupings in such some way that take in extra right models of understudies' learning practices.

Shen S et. al [28], system depends on Dynamic Time Warping (DTW), that computes distance between any two temporal sequences even with different lengths. they explored both the original DTW and normalized DTW to produce distance matrix and apply Hierarchical Clustering to the outcome distance matrix. To thoroughly assess the capacity of temporal sequential clustering framework, they calculate distance matrix at three types of granularity in the increasing order of issues, level, and session crosswise over three training datasets. clearly, comes about demonstrate that clustering moment-to-moment temporal sequences at downside coarseness is less complex than level and session

coarseness.

Hansen C et. al[29], demonstrated students as a dissemination of Markov chains, utilized the modified k-means clustering algorithm. The following Markov chains are readily interpretable, and in a qualitative analysis around 125,000 student sessions are identified as exhibiting unproductive student conduct.

Inferring Question discussions in online learning environments Renuka et. al [30], utilize various leveled agglomerative bunching that adventures similitudes amongst words and their dispersed portrayals, reflecting both lexical and semantic comparability of inquiries. They assessed the outcomes on certifiable named dataset to show the viability of the technique.

Shimin et. al [31], examined the adequacy of an online introduction course in enhancing students' maintenance in an online school program. Using student action information from the induction course, Engage, they make utilization of machine learning strategies to create expectation models of whether students will be held and keep on registering for program-particular courses in the adversity program.

A novel, information driven calculation for producing criticism for students on open-finished programming issues displayed by Thomas et. al [32]. The feedback goes past following stage clues, commenting on astudent's entire program with proposed alters, including code that ought to be moved or reordered. They assemble a current work to plan a system for assessing this criticism in contrast with human guide feedback, utilizing a dataset of genuine students help requests.

Joshua et. al [33], recognized BKTSR and RKT-SR extensions of the current BKT show for knowing how to apply an expertise from knowing when. They contrast their relative execution with that of traditional BKT and PFA on information gathered from Deep Thought, an open-finished propositional rationale coach. They created essential execution bends for student results to help us visually compare model's forecasts with information. Likewise, the presented another approach for finding a likelihood appropriation of activities in positioned, various alternative situations with RKT and RKT-SR.

Andrew et. al [34], displayed an Automatic appraisal of dialogic properties of classroom way to deal with tending to this imbalanced class issue. As opposed to perform orders at the articulation level, they total component vectors to group extents of dialogic properties at the class-session level and accomplish a direct relationship with genuine extents. They demonstrate that this approach beats accumulating level groupings stable for both low and high dialogic classrooms and is steady crosswise over both programmed discourse acknowledgment and human transcripts.

Rakesh et. al [35], gave a dividing calculation that expands add up to pick up summed over every one of the students for any estimation of p to such an extent that $100/(100-p)$ is whole number. The time complexity of the calculation is just $O(N \log N)$. They likewise exhibited exploratory outcomes utilizing genuine information that demonstrate the superiority of the algorithm over current methodologies.

Shamya et. al [36], contemplated randomized controlled examination that looked at changed kinds of full of feeling messages conveyed by educational operators. They utilized animated characters that were empathic and stressed the flexibility of insight and the significance of exertion. These full of feeling messages are intense media to impact students view of themselves as learners, and also their impression of the space being instructed.

Severin et. al [37], utilized semi-supervised classification pipeline that makes powerful utilization of this unlabeled information to essentially enhance model quality. They utilized deep variational auto-encoders to learn proficient features embeddings that enhance the execution for standard classifiers by up to 28% contrasted with totally supervised training. Their strategy is data independent and classifier-agnostic, and subsequently gives the capacity to enhance execution on an assortment of characterization undertakings in EDM.

Andrew et. al [38], introduced another model for learning that relates video watching conduct and commitment to test execution. In their model, a student's knowledge picks up from watching an lecture video is dealt with as corresponding to their dormant commitment level, and the student's commitment is thusly managed by an arrangement of social highlights that measure the student's collaboration with the lecture video. One of the benefits of this strategy for deciding commitment is that it should be possible totally inside standard online learning stages, filling in as a more all-inclusive and less obtrusive other option to existing measures of commitment that require the utilization of outside gadgets.

Lisa et. al [39], encouraged the inserted program accommodation arrangement into a recurrent neural network system and prepare it on two tasks of foreseeing the student's future execution. Via preparing on these tasks, the model learns nuanced representation of a student's knowledge, uncovered examples about a student learning conduct, and dependably predicts future student's execution. Significantly more importantly, the model separates a pool of ineffectively performing students and chosen who have true knowledge, giving educators early admonitions to give help.

Instructive advances, for example, e-reading material like occasion division and relevant numbers can be misused in imagining directions of educator's ICT use were exhibited by Longwei et. al [40]. The additionally examined with the experience structure by means of the certain examples inside the crude information of an e-course book stage. Such mechanized visual portrayal may be useful to the wide and adaptable use of encouraging investigation to speak to instructor's ICT use.

Bydžovská H [1] inquire about concentrations to "give suggestion of particular and facultative courses with importance information, intrigue and available schedule openings in their timetables". They proposed two calculations first for semester determination and another for discovering way in template.

Bydžovská H [2] presented two totally unique methodologies for foreseeing success or failure and grades of researchers. The essential approach is predicated on grouping and regression that look for designs in think about related learning and furthermore information with respect to social conduct. The second approach is predicated on helpful separating procedures.

Clement B, Oudeyer P, Lopes M [3] look into think about two primary methodologies - Partially Observed Markov Decision Process (POMDP) is a markovian process and Zone of Proximal Development and Empirical Success (ZPDES) that can locate an optimal way, and Multi-equipped criminals that advance approaches locally and greedily but that are computationally more proficient while requiring a more straightforward student display for web based arranging of correct encouraging groupings can possibly offer a genuinely redid training appreciate with an enormous impact on the inspiration and gaining knowledge of students.

Hao J, Liu L, Davier A, Kyllonen P and room C [4] given the help of tutorial processing and applied mathematics analysis. Hao J, Liu L, Davier A, Kyllonen P and room C [4] investigated the affiliation between collaboration outcomes and cooperative downside resolution (CPS) skills exhibited throughout the collaboration methodology.

Mostafavi B, Barnes T [5] included information driven strategies into the Deep Thought rationale mentor to create a completely information driven savvy coaching framework. Mostafavi B, Barnes T [5] explored how the expansion of information driven strategies influences understudies' expressive learning of rationale verification fathoming utilizing their post-mentor examination scores. They figure out which techniques are most gainful to students who exhibit higher or bring down learning of the topic.

Klingler S, Käser T, Solenthaler B, Gross M [6] used statistical procedure and analyze the influence wholly completely different of assorted sampling parameters on the performance of the models and study their strength below different model assumption violations. Original theorem info Tracing (BKT) model area unit projected, among them a pair of novel models that unify BKT and Item Response Theory (IRT). Latent issue info Tracing (LFKT) and have Aware Student info Tracing (FAST) exhibit state of the art prediction accuracy. Klingler S, Käser T, Solenthaler B, Gross M [6] decide and compare properties of the models' exploitation artificial info sets.

Paquette L, Rowe J, Baker R, Mott B, Lester J, DeFalco J, Brawner K, Sottilare R, Georgoulas V [7] describe work mistreatment the Generalized Intelligent Framework for Tutoring (GIFT) to make multi-channel have an effect on detection models for a significant game on military science damage care. comparison the creation and prognosticative performance of models developed for 2 totally different information modalities: 1) computer code logs of learner interactions with the intense game, and 2) posture information from a Microsoft Kinect detector and notice that interaction-based detectors shell posture-based detectors for population.

Sabourin J, Kosturko L, FitzGerald C, McQuiggan S [8] gift three primary areas of concern related to student privacy in practice: policy, company social responsibility, and belief, supported experience as academic researchers transitioning into business. Sabourin J, Kosturko L, FitzGerald C, McQuiggan S [8] discussion will describe the key challenges moon-faced among these categories, ways that for overcoming them, and that during which at intervals which the tutorial educational processing (EDM) community can support the adoption of innovative technologies in large-scale production.

Rollinson J, Brunskill E [9] compare the prognostic similarity policy to the mastery threshold policy and see if victimization fully different student as input to the prognostic similarity policy yields quantitatively different policies.

González-Brenes J P, Huang Y [10] given the Learner Effort-Outcomes Paradigm (Leopard), a current framework to guage accommodative tutoring. González-Brenes J P, Huang Y [10] introduces Theoretical analysis of accommodative Learning Systems (Teal) and Whole Intelligent Tutoring System analysis (White), novel automatic metrics that apply Leopard and quantify the amount of effort required to realize a learning outcome. Teal focuses on models of the information Tracing Family a extremely modern set of student models. knowledge Tracing uses a Hidden Andrei Markov Model (HMM) per ability to model the student's knowledge as latent variables.

Olsen J K, Aleven V, Rummel N [11] alter the Additive Factors Model (AFM), a typical logistical regression model for modeling individual learning, usually employed in conjunction with information part models and tutor log knowledge. The extended model predicts performance of scholars' resolution issues collaboratively with associate degree ITS.

Luo L, Koprinska I, Liu W [12] given discrimination-aware classification for mining of academic knowledge, with a case study in predicting student examination performance supported incoming info and assessment marks throughout the semester, within the context of a computer programing course. They applied discrimination-aware technique DAAR, that relies on association rules, and conjointly DADT, a discrimination-aware call tree technique, and compared DAAR and DADT with their non-discrimination-aware alternatives.

Feild J [13] providing students with continuous and personalized feedback on their performance a crucial a part of encouraging self-regulated learning. As a part of education platform, Feild J builds a collection of knowledge visualizations to produce feedback to students on their assignment performance. These visualizations provide students

info regarding however they're doing compared to the remainder of the category and permit them to match the time they spent on assignments across their courses. enclosed within the feedback are `nudges' which give steerage on however students may improve their performance by adjusting once they begin or submit assignments.

Bravo J, Romero S J, Luna M, Pamplona S [14] evaluated variations in step with age in digital ability, usages, and perspective towards ICT. To meet this goal, hypothesis testing, correlation analysis, and data processing techniques were performed on the idea of a 72-item survey. Results showed no sturdy variations between extreme teams old-time. Besides, some attention-grabbing correlations between variables and extra data through association rules were found.

Thakar P, Mehta A, Manisha [15] compared numerous classification algorithms on two datasets of MCA students collected from numerous attached faculties of a purported state university in Republic of India. One dataset includes solely primary attributes, whereas alternative dataset is feeded with secondary psychology attributes in it. The study analyzes and stresses the role of secondary psychology attributes for higher prediction accuracy and analysis of students' performance. Timely prediction and analysis of students' performance will facilitate Management, lecturers and Students to figure on their grey areas for higher results and employment opportunities.

Pelánek R [16] studied two versatile approaches to ability estimation: time decay functions and the Elo scoring system. Results of experiments in many different settings show that these straightforward approaches offer sensible and consistent performance.

Chi M, Schwartz D L, Chin D B [17] analysis deep-mined students' sequent behaviors from an educational game for color commixture referred to as Lightlet. Students enjoying the sport have two broad ways. They will either check candidate color mixtures in an experiment area while not risking an incorrect answer. Or they will opt for colors from a fake searching Catalog containing many different commixture charts. Chi M, Schwartz D L, Chin D B [17] known the crucial selection pattern(s) in students' game play that will contribute to their learning or consequent performance.

Käser T, Koedinger K R, Gross M [18] explores a wider set of modeling techniques and by employing a knowledge set with further observations of long run retention that offer a check on whether or not judged mastery is maintained just in case of non-random factors drive. The information set at hand contains scientific discipline learning data from kids with and while not organic process learning disorder. Käser T, Koedinger K R, Gross M [18] check variations on supplying regression, as well as the Additive Factors Model et al expressly designed to regulate for mastery-based knowledge, furthermore as Bayesian data Tracing.

Bazaldua D A L, Baker R S, Pedro M O Z S [19] examined metrics by distilling association rules from real academic knowledge relevant to established analysis queries within the areas of have an effect on and disengagement. Then raise three domain consultants to rate the power of the resultant rules and eventually analyze the information to work out that metric(s) best trust professional judgments of power.

Khajah M M, Wing R M, Lindsey R V, Mozer M C [20] proposed a scrupulous synthesis of the two approaches Latent-factor models and Knowledge-tracing models during a hierarchical Bayesian model that predicts student performance by integration a theory of the temporal dynamics of learning with a theory of individual variations among students and issues. They realize vital prognostic price in considering the issue of specific issues, a supply of knowledge that has seldom been exploited.

Stefanescu D, Rus V, Graesser A C [21] described a component of a project whose goal is to sight students' previous data levels with regard to a target domain primarily based alone on characteristics of the language interaction between students and a progressive colloquial Intelligent Tutoring System(ITS). They collected dialogues from two versions of the intelligent tutoring system Deep Tutor: a micro-adaptive-only version and a fully-adaptive (micro and macro-adaptive) version.

Kokkodis M, Kannan A,Kenthapadi K [22] analysis focuses to rigorous formulation of the video assignment drawback ANd given an algorithmic program for distribution every video to the optimum set of logical units. Kokkodis M, Kannan A,Kenthapadi K [22] experimental analysis employing a various assortment of academic videos relevant to multiple chapters during a textbook demonstrates the effectivity of the planned techniques for inferring the graininess at that a relevant video ought to be appointed.

Arora R K, Badal D [23] focuses to spot those set of scholars that are probably to face issue in obtaining the placements. The analysis exploitation call tree is being through with the assistance of WEKA tool.

Arora R K, Badal D [24] analysis assist the tutorial planners in identification of scholars that require a lot of attention specified the additional efforts are often used on these set of scholars to boost the results.

III. CONCLUSION:

Discusses literature shows that how data mining is useful in the educational domain. Data mining provides a deeper knowledge hidden inside the detailed data. In the educational domain a lot of researches organized using data mining. These researches come with valuable suggestion to help students, educators, authorities of institution etc. to make healthy environment and policy document to keep institution competitive with other institution.

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A Survey Paper On: *Security Violation & Challenge*

DEVENDRA CHAPHEKAR
Department of Computer Science
Seth Phoolchand Agrawal
Smriti Mahavidyalaya,
Nawapara-Rajim
devendra74chaphekar@gmail.com

NEERAJ KUMAR NAGE
Department of Computer Science
Seth Phoolchand Agrawal
Smriti Mahavidyalaya,
Nawapara-Rajim
neeraj.nage07@gmail.com

MINAL CHAPHEKAR
Department of Computer Science
Govt. D.B. P.G. Girls College,
Raipur
minal86chaphekar@gmail.com

Abstract— **Cyber Security plays an important role in the field of information technology. In this era of technology where information is the major source for any organization for maintaining and generating results as per the requirement but on the other hand security is the major issue which need to be achieved anyhow. The primary thing which hit our mind while talking about cyber security is cybercrime which is increasing immensely and vastly in these days. An example of the cyber security can be taken from the social networking sites where a user seems to upload their information in order to share it with the world but on the other hand some people are ruining it for their sake as well. On the other hand government is still not completely successful in reducing the cybercrime. The main aim of the paper is to spread awareness regarding the challenges faced in cyber security and the latest technologies to deal with it. It also focuses on latest about the cyber security techniques, ethics and the trends changing the face of cyber security**

Keywords—cyber security, cybercrime, cyber ethics, social media, cloud computing, android apps.

I. INTRODUCTION

Today man is able to send and receive any form of data may be an e-mail or an audio or video just by the click of a button but did he ever think how securely his data id being transmitted or sent to the other person safely without any leakage of information. The answer lies in cyber security. Today Internet is the fastest growing infrastructure in everyday life. In today's technical environment many latest technologies are changing the face of the mankind. But due to these emerging technologies we are unable to safeguard our private information in a very effective way and hence these days cybercrimes are increasing day by day. Today more than 60 percent of total commercial transactions are done online, so this field required a high quality of security for transparent and best transactions. Hence cyber security has become a latest issue. The scope of cyber security is not just limited to securing the information in IT industry but also to various other fields like cyber space etc. Even the latest technologies like cloud computing, mobile computing, E-commerce, net banking etc also needs high level of security. Since these technologies hold some important information regarding a person their security has become a must thing. Enhancing cyber security and protecting critical information infrastructures are essential to each nation's security and economic wellbeing. Making the Internet safer (and protecting Internet users) has become integral to the development of new services as well as governmental policy. The fight against cybercrime needs a comprehensive and safer approach. Given that technical measures alone cannot prevent any crime, it is critical that law enforcement agencies are allowed to investigate and prosecute cybercrime effectively. Today many nations and governments are imposing strict laws on cyber securities in order to prevent the loss of some important information. Every individual must also be trained on this cyber security and save themselves from these increasing cybercrimes.

II. CYBER CRIME

Cybercrime is a term for any illegal activity that uses a computer as its primary means of commission and theft. The U.S. Department of Justice expands the definition of cyber crime to include any illegal activity that uses a computer for the storage of evidence. The growing list of cybercrimes includes crimes that have been made possible by computers, such as network intrusions and the dissemination of computer viruses, as well as computer-based variations of existing crimes, such as identity theft, stalking, bullying and terrorism which have become as major problem to people and nations. Usually in common man's language cybercrime may be defined as crime committed using a computer and the internet to steel a person's identity or sell contraband or stalk victims or disrupt operations with malevolent programs. As day by day technology is playing in major role in a person's life the cybercrimes also will increase along with the technological advances.

TABLE 9A.1
Cyber Crimes (State/UT-wise) - 2016-2018

S. No	State/UT	2016	2017	2018	Percentage Share of State/UT (2018)+	Mid-Year Projected Population (in Lakhs) (2018)+	Rate of Total Cyber Crimes (2018)++
1	2	3	4	5	6	7	8
STATES:							
1	Andhra Pradesh	616	931	1207	4.4	520.3	2.3
2	Arunachal Pradesh	4	1	7	0.0	14.9	0.5
3	Assam	696	1120	2022	7.4	340.4	5.9
4	Bihar	309	433	374	1.4	1183.3	0.3
5	Chhattisgarh	90	171	139	0.5	284.7	0.5
6	Goa	31	13	29	0.1	15.3	1.9
7	Gujarat	362	458	702	2.6	673.2	1.0
8	Haryana	401	504	418	1.5	284.0	1.5
9	Himachal Pradesh	31	56	69	0.2	72.7	0.9
10	Jammu & Kashmir	28	63	73	0.3	134.3	0.5
11	Jharkhand	259	720	930	3.4	370.5	2.5
12	Karnataka	1101	3174	5839	21.4	654.5	8.9
13	Kerala	283	320	340	1.2	350.0	1.0
14	Madhya Pradesh	258	490	740	2.7	814.7	0.9
15	Maharashtra	2380	3604	3511	12.9	1213.9	2.9
16	Manipur	11	74	29	0.1	30.8	0.9
17	Meghalaya	39	39	74	0.3	32.0	2.3
18	Mizoram	1	10	6	0.0	11.8	0.5
19	Nagaland	2	0	2	0.0	21.3	0.1
20	Odisha	317	824	843	3.1	435.5	1.9
21	Punjab	102	176	239	0.9	297.0	0.8
22	Rajasthan	941	1304	1104	4.1	765.9	1.4
23	Sikkim	1	1	1	0.0	6.6	0.2
24	Tamil Nadu	144	228	295	1.1	754.6	0.4
25	Telangana	593	1209	1205	4.4	370.3	3.3
26	Tripura	8	7	20	0.1	39.6	0.5
27	Uttar Pradesh	2639	4971	6280	23.0	2230.0	2.8
28	Uttarakhand	62	124	171	0.6	110.6	1.5
29	West Bengal	478	568	335	1.2	965.0	0.3
	TOTAL STATE(S)	**12187**	**21593**	**27004**	**99.1**	**12997.9**	**2.1**
	UNION TERRITORIES:						

NCRB (National Crime Records Bureau) has been publishing the data related to Cyber Crimes in its CII (Crimes in India) report. By this report, we can easily compare that the total number of Cyber-Crimes recorded increased in 2018.

III. CYBER SECURITY

Privacy and security of the data will always be top security measures that any organization takes care. We are presently living in a world where all the information is maintained in a digital or a cyber form. Social networking sites provide a space where users feel safe as they interact with friends and family. In the case of home users, cyber-criminals would continue to target social media sites to steal personal data. Not only social networking but also during bank transactions a person must take all the required security measures.

As crime is increasing even the security measures are also increasing. According to the survey of U.S. technology and healthcare executives nationwide, Silicon Valley Bank found that companies believe cyber-attacks are a serious threat to both their data and their business continuity. 98% of companies are maintaining or increasing their cyber security resources and of those, half are increasing resources devoted to online attacks this year The majority of companies are preparing for when, not if, cyber-attacks occur Only one-third are completely confident in the security of their information and even less confident about the security measures of their business partners. There will be new attacks on Android operating system based devices, but it will not be on massive scale. The fact tablets share the same operating system as smart phones means they will be soon targeted by the same malware as those platforms. The number of malware specimens for Macs would continue to grow, though much less than in the case of PCs. Windows 8 will allow users to develop applications for virtually any device (PCs, tablets and smart phones) running Windows 8, so it will be possible to develop malicious applications like those for Android, hence these are some of the predicted trends in cyber security.

IV. VIOLATION OF CYBER SECURITY

Here mentioned below are some of the violation that are having a huge impact on cyber security.

- Web servers: The threat of attacks on web applications to extract data or to distribute malicious code persists. Cyber criminals distribute their malicious code via legitimate web servers they've compromised. But data-stealing attacks, many of which get the attention of media, are also a big threat. Now, we need a greater emphasis on protecting web servers and web applications. Web servers are especially the best platform for these cyber criminals to steal the data. Hence one must always use a safer browser especially during important transactions in order not to fall as a prey for these crimes.

- Cloud computing and its services: These days all small, medium and large companies are slowly adopting cloud services. In other words the world is slowly moving towards the clouds. This latest trend presents a big challenge for cyber security, as traffic can go around traditional points of inspection. Additionally, as the number of applications available in the cloud grows, policy controls for web applications and cloud services will also need to evolve in order to prevent the loss of valuable information. Though cloud services are developing their own models still a lot of issues are being brought up about their security. Cloud may provide immense opportunities but it should always be noted that as the cloud evolves so as its security concerns increase.

- APT's and targeted attacks: APT (Advanced Persistent Threat) is a whole new level of cybercrime ware. For years network security capabilities such as web filtering or IPS have played a key part in identifying such targeted attacks (mostly after the initial compromise). As attackers grow bolder and employ more vague techniques, network security must integrate with other security services in order to detect attacks. Hence one must improve our security techniques in order to prevent more threats coming in the future.

- Mobile Networks: Today we are able to connect to anyone in any part of the world. But for these mobile networks security is a very big concern. These days firewalls and other security measures are becoming porous as people are using devices such as tablets, phones, PC's etc all of which again require extra securities apart from those present in the applications used. We must always think about the security issues of these mobile networks. Further mobile networks are highly prone to these cybercrimes a lot of care must be taken in case of their security issues.

- IPv6: New internet protocol IPv6 is the new Internet protocol which is replacing IPv4 (the older version), which has been a backbone of our networks in general and the Internet at large. Protecting IPv6 is not just a question of porting IPv4 capabilities. While IPv6 is a wholesale replacement in making more IP addresses available, there are some very fundamental changes to the protocol which need to be considered in security policy. Hence it is always better to switch to IPv6 as soon as possible in order to reduce the risks regarding cyber crime.

- Encryption of the code: Encryption is the process of encoding messages (or information) in such a way that eavesdroppers or hackers cannot read it.. In an encryption scheme, the message or information is encrypted using an encryption algorithm, turning it into an unreadable cipher text. This is usually done with the use of an encryption key, which specifies how the message is to be encoded. Encryption at a very beginning level protects data privacy and its integrity. But more use of encryption brings more challenges in cyber security. Encryption is also used to protect data in transit, for example data being transferred via networks (e.g. the Internet, ecommerce), mobile telephones, wireless microphones, wireless intercoms etc. Hence by encrypting the code one can know if there is any leakage of information. Hence the above are some of the trends changing the face of cyber security in the world. The top network threats are mentioned in below The above pie chart shows about the major threats for networks and cyber security.

V. LITEREATURE REVIEW

C.Wong et al [1] the scheme introduced a new structure in the form of message which is right for multicast key managing systems. The new message structure uses one way tasks to distribute fresh key material securely for the users in the subgroups. The main benefit of this method above the traditional message will be sent to standard the users which portion of the meaning is intended for them and no additional messages will be sent.

Chen J et al [2] the system affords decentralized access control structure for the cloud storage methods, a decentralized access control schemes with the secret key of privacy preserving extraction. This scheme will not require any feature authentication and synchronization among many authorities. It takes on the Pedersen assurance and envelope rules based insensible assurance as the main cryptographic primitives for addressing the security issues. So the users get the passwords for the legal authentication elements.

Binbusayyis A et al [3] the scheme extend the feature of adding identity based user revocation to distribute ABE. The scheme also achieves multiple independent attribute authorities.

J ganeshkumar et al [4] Decrypting of data can be viewed only by a valid user. This scheme prevents replay attack which means eaves dropping can be avoided. Decrypting of data can be viewed only by a valid user.

Sushmita Ruj et al [5] this paper provides a system to check the authorization of the message stored in the cloud deprived of the user information. It also satisfies the privacy and user authorization. Hwang et al. pointed out that if the password table is compromised, the whole system will be insecure. They then proposed a new remote user authentication scheme using smart card. But their scheme cannot resist impersonation attack, where a user can impersonate the other valid user to use his/her ID and password without knowing the secret key.

Divya bharathy et al [6] the new data is replaced by the previous write of the sale data even without the policy of the prior data being valid. It also checks the authentication of the user and the security policy.

A Vijayalakshmi et al [7] this paper deals with the anonymous authorization along with a distributed control method for access.

Swetha Maharajanavar et al [8] this paper deals with a technique for user authorization of the data present in the cloud in a distributed system. It provides precaution for the repetition attack and solves the withdrawal of a user.

Diffie-Hellman protocol is a method that enables two users to share a secret key and agree to exchange the information over insecure network [10]. This method allows users credential to be transmitted over the network which can cause attack such as Man-in-the-Middle attack. It can also compromise a user's privacy by exposing the users credential without any protection. Password- Authenticated Key Exchange (PAKE) has been introduced by combining key exchange scheme and password-based authentication technique. This scheme uses one-way function to generate verifier and all party involved to compute the secret key. However, this scheme suffers on protecting the verifier from malicious attacker and the corresponding secret password is still needed.

Table 1 Analysis Of The Available Recent Algorithms.

Authors	Algorithm/Technique	Advantages	Disadvantages	Remarks
Rescorla E. [10]	Diffie-Hellman protocol.	Enables two users to share information.	It suffers from protecting the malicious attackers.	Credentials are the primary aim in this.
Swetha Maharajanavar et al [8]	User authorization.	Data is present in the cloud in a distributed system.	Repetition attackers.	It provides precaution for the repetition attack.
C.Wong et al [1]	New structure in the form of message.	The new message structure uses one way tasks to distribute fresh key material securely.	It is quite slow.	Traditional message will be sent to standard the users.
Binbusayyis, A. [2]	Decentralized access control structure.	It takes on the Pedersen assurance and envelope rules based insensible assurance	It done the primitive cryptography.	The users get the passwords for the legal authentication elements.
Maharajanavar, S. [5]	This uses the techniques to check the authorization of the messages.	It also satisfies the privacy and user authorization	Sometimes the security may effect by the unauthorized access.	A new remote user authentication scheme using smart card.

In the comparison table 1 above, some existing recent algorithms are discussed, their advantages, disadvantages, limitation and further extension is discussed in the given table.

VI. CYBER SECURITY TECHNIQUES

- Access control and password security: The concept of user name and password has been fundamental way of protecting our information. This may be one of the first measures regarding cyber security.

- Authentication of data: The documents that we receive must always be authenticated be before downloading that is it should be checked if it has originated from a trusted and a reliable source and that they are not altered. Authenticating of these documents is usually done by the anti virus software present in the devices. Thus a good anti-virus software is also essential to protect the devices from viruses.

- Malware scanners: This is software that usually scans all the files and documents present in the system for malicious code or harmful viruses. Viruses, worms, and Trojan horses are examples of malicious software that are often grouped together and referred to as malware.

- Firewalls: A firewall is a software program or piece of hardware that helps screen out hackers, viruses, and worms that try to reach your computer over the Internet. All messages entering or leaving the internet pass through the firewall present, which examines each message and blocks those that do not meet the specified security criteria. Hence firewalls play an important role in detecting the malware.

- Anti-virus software: Antivirus software is a computer program that detects, prevents, and takes action to disarm or remove malicious software programs, such as viruses and worms. Most antivirus programs include an auto-update feature that enables the program to download profiles of new viruses so that it can check for the new viruses as soon as they are discovered. An anti virus software is a must and basic necessity for every system.

VII. CONCLUSION

Computer security is a vast topic that is becoming more important because the world is becoming highly interconnected, with networks being used to carry out critical transactions. Cyber crime continues to diverge down different paths with each New Year that passes and so does the security of the information. The latest and disruptive technologies, along with the new cyber tools and threats that come to light each day, are challenging organizations with not only how they secure their infrastructure, but how they require new platforms and intelligence to do so. There is no perfect solution for cybercrimes but we should try our level best to minimize them in order to have a safe and secure future in cyber space.

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Stage-based Cyber Physical Systems with State-based Intrusion Detection

Shishir Kumar Sharma[1],   Nisha Bhoi[2], Dr. Kajal Kiran Gulhare[3]

[1] Research Scholar, Kalinga University, Naya Raipur (C.G.)
[2] Asst. Professor, Govt. V.Y.T. P.G. Auto. College, Durg (C.G.)
[3] Asst. Professor, Govt. E. Raghavendra Rao P.G. Science College, Bilaspur (C.G.)

Abstract:

Intrusion is one of the vital problem with cyber security, and attacks to Cyber Physical Systems (CPSs) are detected by Industrial Intrusion Detection Systems (IIDSs). Operation of stage-based CPSs (those for which their underlying process is batch) consists of three parts: normal states, normal transitions between the normal states, and normal time-intervals for transitions. Unfortunately, state-of-the-art IIDSs directly address cyber-attacks that result in abnormal states whereas abnormal transitions or time-intervals can also indicate cyber-attacks. With this research work, a State-based IDS (SIDS) is proposed to detect all three anomalies. For doing this, SIDS first automatically extracts the normal behavior of CPS. Then it monitors current CPS behavior and detects intrusions by directly looking at the data of field layer. I'll take a small-scale but real CPS (a mixer process) to illustrate how SIDS works.

Keywords:- Cyber Physical System (CPS), Intrusion Detection System (IDS), Cyber attacks.

Mobility and ICT in service-learning: perspectives for a global and technological society

Thakur Devraj Singh[1] ,   J Durga Prasad Rao[2] ,   Om Prakash Patel[3]

[1] Assistant Professor, Shri Shankaracharya Mahavidyalaya, Junwani, Bhilai. dev78888@hotmail.com

[2] Additional Director and HOD Computer Science, Shri Shankaracharya Mahavidyalaya, Junwani, Bhilai. j.durga.prasad.rao@gmail.com

[3] Librarian, Shri Shankaracharya Mahavidyalaya, Junwani, Bhilai. patelop75@rediffmail.com

Abstract:
The current knowledge society is the beginning of one of the most profound transformations in the history of the university, not only in social terms but also in pedagogical terms. In this regard, global connections and internationalisation are between the two aspects that have affected the foundations of the university institution most, permeating all the processes that take place there. Add to this the rise of new methodologies, the case of service-learning (SL), in which learning processes are combined with a service to the community; we are facing a challenge because of the combination of the two elements. This article discusses the possibilities for academic and pedagogical integration of SL with technological and international projection. To this end, we carry out a wide-ranging bibliographic review in order to bring us closer to both international service-learning and e-learning. We conclude that, in addition to their similarities, both hybridisations allow service-learning to respond to the pedagogical trends that are having the most significant impact in a global context for higher education: international mobility and the emergence of technologies. However, the different modalities of e-SL seem more realistic and tailored to the current situation than international service-learning, especially in economic terms, as ICTs make it possible to offset the disadvantages that arise when a mobility component is introduced within a regulated training context.

Keywords:
Electronic service-learning; International service-learning; Information and communication technologies; Student mobility; Higher education

A Study on Technology and Innovation among Women Self –Help Groups in Raipur City

Gayathri

Research Scholar,   Pt.R.S.S.U

Raipur (C.G.)

Abstract:

The present scenario is the age of women empowerment. Women empowerment is the driving force that accelerates the economic strength of a nation. Women empowerment ensures the multi-dimensional growth such as economical, cultural, and social of women in rural area. Now-a-days it become as a key need as women contributes more than 50% populations in C.G. state. Thousands of people of C.G. living below the poverty line may able to improve their life through self help groups. Self help groups provide sense of security and safe guard to women population in the state. This research paper is based on women self help groups beneficiary and their standard of living. The study is focusing on adopting of modern technology by the self help group beneficiary and application of the technique to enhance their economic strength.

Keywords: Self-help groups, women empowerment, economic   development.

A Review on Agriculture and Challenges through IoT in India

Mr. Digeshwar Prasad Sahu
Seth Phoolchand Agrawal Smriti
Mahavidhyalay Nawapara
dksahu2007@gmail.com

Mr. Mahendra Dwivedi
Seth Phoolchand Agrawal Smriti
Mahavidhyalay Nawapara
mahendra.dwivedi95@gmail.com

Abstract :

India is a developing country as well as an agricultural country which is adopting technology in every field. Lack of accurate knowledge of the weather is a big loss for the farmers and due to ignorance of soil extractor, there is also a decrease in production. Therefore, for the farmers, we need to bring some technology that gives accurate information about the weather and soil. IoT is one such technology which is used in agriculture by major countries like China, Japan and Israel. IoT based technology will prove to be a boon for farmers. The use of IoT technology in agriculture provides benefits such as income for agricultural work, increase in yield, saving water and lower labor requirement, the get their best price for product and also best market for consumption and will also help in the growth of Indian economy. The sensors present in it will be helpful in detecting soil moisture, irrigation, crop conditions and pests. In this paper, it has been tried to highlight that the use of IoT technology along with wireless sensors in agriculture will be helpful in future but what kind of challenges will be faced in India.

Antimicrobial properties of green synthesized silver nanoparticles

[1]Sangita Sharma,   [2]Kaushilya Sahu and   [3] Vaidehi Sharma

[1.] Department of Botany, Government College Bori, Durg (C.G.), India

[2.] Department of Botany, Shahid Rajiv Pandey Govt. College Bhatagaon, Raipur (C.G.), India

[3.] Department of Geography, Government College Bori, Durg (C.G.), India

Email: sangeetadevisharma2206@gmail.com[1]

Abstract:
Nanotechnology is an important field of modern research which dealing with the synthesis of particle's ranging from approximately 1 to 100 nm in size. The upcoming researches have also proven their remarkable antimicrobial significance due to their large surface area to volume ratio. Among several noble metal nanoparticles, silver nanoparticle has gained boundless interests because of their unique properties such as chemical stability, good conductivity, catalytic and most important antibacterial, anti-viral, antifungal and antiflammatory activities. Many literature have been published about the green synthesis of silver nanoparticles using plant extracts and microorganisms (bacteria, fungi etc.), because of their antioxidant or reducing properties typically responsible for the reduction of metal compounds in their respective nanoparticles. The use of plants as the production assembly of silver nanoparticles has drawn attention, because of its rapid, eco-friendly, non-pathogenic, economical protocol and providing a single step technique for the biosynthetic processes. The reduction and stabilization of silver ions by combination of biomolecules such as proteins, amino acids, enzymes, polysaccharides,
alkaloids, tannins, phenolics, saponins, terpinoids and vitamins which are already established in the plant extracts having medicinal values and are environmental benign, yet chemically complex structures. A large number of plants are reported to facilitate silver nanoparticles syntheses. There is still a need for commercially viable, economic and environment friendly route to find capacity of natural reducing constituent to form silver nanoparticles which has not yet been studied. There is a significant variation in chemical compositions of plant extract of same species when it collected from different parts of world and may lead to different results in different laboratories. This is the major drawback of synthesis of silver nanoparticles using plant extracts as reducing and stabilizing agents and there is need to resolve this problem. The antimicrobial properties of silver nanoparticles depend on size, environmental conditions (size, pH, ionic strength) and capping agent. The exact mechanisms of antimicrobial or toxicity activities by silver nanoparticles are still in investigation and a well debated topic.

Key words: *silver nanopartical, plant extract, green synthesis, antimicrobial activities*

One pot green synthesis of silver nanoparticles
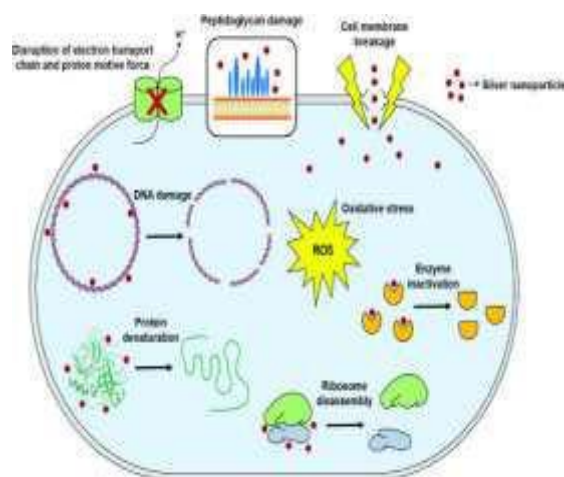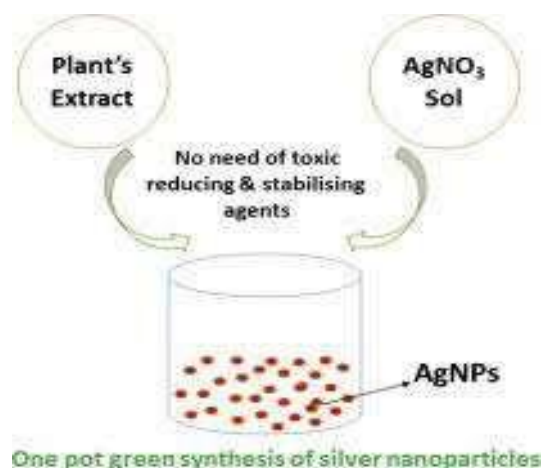
Ensemble Approach for Classification of Multi-class Microarray Cancer Data

Prem Chandrakar

Abstract:

At the present time, microarray cancer analysis is one of the top research areas in the field of machine learning, computational biology, and pattern recognition. Classifying cancer data into their respective class and its analysis plays a key role in diagnosis, identifying negative and positive cases as well as treatment in the case of binary classes. In the case of multi-class classification, the aim is to identify the type of cancer. The main challenge in microarray cancer datasets is the curse of dimensionality and lack of sufficient sample data. To overcome this problem, feature selection and dimensionality reduction are explored in identifying relevant features. In this work, we propose an ensemble learning method for multi-class cancer data classification. The Information Gain (IG) is used for feature selection which works by ranking attributes according to their relevance with respect to the class label. Three classifiers are used, namely k-Nearest Neighbor, Logistic Regression, and Random Forest. tenfold cross validation is applied to train and test the model. Experiments are conducted on the standard multi-class cancer datasets, namely Leukemia 3 class, Leukemia 4 class, Harvard Lung cancer 5 class, and MLL 3 class. To evaluate the performance of the model, various performance measures such as Classification Accuracy, F1-measure, and Area Under the Curve (AUC) are used. Confusionmatrix is used to show whether or not samples are correctly classified. Comparison of each classifier's performance is presented on the basis of performance evaluation criteria. Significant performance improvement is observed in the results due to feature selection for three of the classifiers with the exception of random forest's performance on MLL Leukemia whose result is found to be good on the original dataset compared to the selected features. For the rest of the datasets, all classifiers registered better result due to feature selection.

Keywords Feature selection, Dimensionality reduction · Ensemble learning, Microarray cancer data classifier