



VOLUME I - DECEMBER 2016

Xavier's Student Journal

# INFORMATICA

- Computer Science and Technology

DEPARTMENT OF COMPUTER SCIENCE

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# INFORMATICA

(Xavier's Student Journal of Computer Science and Technology)



**Department of Computer Science**

**ST. XAVIER'S COLLEGE, JAIPUR**  
Hathroi Fort Road, Jaipur, RAJASTHAN - 302001

# EDITORIAL MESSAGE



It is with great pride, enthusiasm, and anticipation that I invite you to read the inaugural issue of-“INFORMATICA - Xavier’s Student Journal of Computer Science and Technology”.

The growing process of digitization brings with it both boons and banes. It is very important that the young researchers-educators unite and collaborate on issues which confront society today. Informatica attempts to document and spark a debate on the research focused on technology in context of emerging geographies.

Informatica strives to showcase a broad range of research conducted by students, thus providing a forum in which individuals from the diverse fields can learn about interdisciplinary research. I hope that by providing opportunities for undergraduates to have their research published, we can continue to foster their pursuit of knowledge and engage their investigative spirit. The first issue has been very carefully put together covering a range of technologies in the domain of printing, cloud computing, wireless technologies, IT services, amongst others.

In order to achieve these ambitious goals, we have worked tirelessly over the past year to produce this first issue. We could not have done it without the amazing support we have received from the editorial team of Informatica, Xavier’s faculty members and the college management itself. I would also like to thank the students who submitted their work for publication.

We are certain that the research featured here sets up many new milestones. We hope that the papers in this journal will challenge and inform our readers, initiate discussions and encourage more students to explore the issues.

Happy reading!

**Ms. Vaishali Singh**  
**(Editor-in-Chief)**

Asst. Prof., Department of Computer Science  
St. Xavier’s College, Jaipur

# EDITORIAL TEAM



Credits : Dixit Chauhan-BCA II Year

**LEFT TO RIGHT:** Bhoomi Chaplot, Sahil Mehta, Raj Yadav, Vaishali Singh (Supervisor), Roopak Bhama, Vaibhav Agarwal and Harshi Sharma.

Research has special importance in our life. Lectures, textbook, and reading of literature have a critical place in education, but deep learning of anything requires hands-on experience.

Informatica demonstrates the fruit of such “hands-on-learning” and the ability of the students to contribute to new discoveries. Student research, such as represented here, will contribute not only to the formation of the next generation of investigators and innovators but also to a more literate society.

As with any large endeavor, editorial team owe thanks to many people and our supervisor Ms. Vaishali Singh, who has volunteered her time and energy to support us. Certainly, this inaugural issue would not have been possible without the gracious support of the entire editorial team, computer department and the college management. We would also like to thank the authors who submitted their research in the Informatica, who made our life easier by doing such excellent work.

We hope that this journal will delight your intellectual curiosity as you flip through the following pages.

**Bhoomi Chaplot**

**(Editor)**

Student, BCA II

St. Xavier's College, Jaipur

# St. Xavier's College

Jaipur, Rajasthan - 302001



## MESSAGE

Research is of great importance. Embracing new technologies and keeping abreast with the evolving digital world is a challenge, which has the potential to create a colossal impact. Department of computer science is making a serious effort to bring a number of scholars pursuing research on different interesting topics.

More than a serious academic study, INFORMATICA, a student journal will bring to its focus, issues relating to relevance and practical suggestions which will have far reaching implications in the field of technology. It gives me immense pleasure to see the academic and creative pursuits of our students.

I wish the students very best of luck for their future endeavors and encourage researchers to actively participate by contributing well researched papers in the future. I congratulate the Department of Computer Science for imbuing this spirit of progress in their students.

**Fr. Glenn Menezes, S.J.  
Rector**

# St. Xavier's College

Jaipur, Rajasthan - 302001



## MESSAGE

Today, the student community is showing a greater inclination towards digitization as it provides an exciting career option. I am glad that Department of Computer Science is issuing the first journal INFORMATICA, which will surely showcase the research activities which is very needed today in the world of competition .

This endeavor will surely work as an appropriate tool to reinforce skills in the research based practice and culminate knowledge and ideas in the academia and practice into a published form. With an aim to create awareness about the digital world, the Department of Computer Science brings out the journal that showcases the latest potential of our students who are engaged in pioneering research in the field of the computer science.

I wish all the readers an enjoyable reading and hope they will found it both interesting and instructive. I express cordial gratitude to the Department of Computer Science for their contribution in publishing the journal.

**Rev. Dr. V. Gilbert Camillus, S.J.**  
**Principal**

# St. Xavier's College

Jaipur, Rajasthan - 302001



## MESSAGE

Students at Xavier's are united by a natural curiosity about fundamental, yet practical, life questions. These kinds of questions are at the heart of discovery of different disciplines. The distinction surrounding the creative and determined spirit that Xavier's students embody grows with each class as they develop their own style and method of spreading the impact and benefits of the work that they engage in campus.

I congratulate the Department of Computer Science for the student journal INFORMATICA, which is not only a vibrant expression of the young minds but also a portrait of hard work of the students. This journal provides a platform for our students to showcase their talents and creativity.

I would like to commend, the members of the department for promoting meaningful research.

**Fr. Joshy Kuruvilla, S.J.**  
**Vice Principal**



# St. Xavier's College

Jaipur, Rajasthan - 302001



## MESSAGE

As a relative newcomer to Xavier's, I have been struck and impressed by the intellectual prowess and passion of the students at Xavier's. It is wonderful to have this forum to highlight the work that students are conducting in at Xavier's. Students here regardless of their discipline share the common goal of making our world a better place through ingenuity, innovation, and an almost limitless enthusiasm.

In the present day world, technology with communication skills offers innumerable chances to encounter and explore new insights in all the areas of professional life. The student journal INFORMATICA, is a medium through which various IT-related research and information has been provided. I express my appreciation for the members of the Department of Computer Science for their persistent efforts towards taking the college, as well as the department, to newer heights.

**Rev. Fr. Abraham Amal Raj, S.J.**  
**Dean**

# St. Xavier's College

Jaipur, Rajasthan - 302001



## MESSAGE

Information Technology provides the feature of using information as a resource. The chief objectives of the Department of Computer Science are to train and enlighten students in the field of technology and furnish them with a practical knowledge in order to face the challenges of the computing industry.

Research plays a very important role in enhancing the intellects of the students, academicians etc. Here at St. Xavier's College, Jaipur we provide a supportive environment in which not only faculties but the students are empowered to chase the great advances in the field of the outstanding research.

Moving a step further the research work of the students of Department of Computer Science are compiled in form of a student journal '*Informatica*'.

I wish the team of student journal a great success in their future endeavors.

**Ms. Arpita Banerjee**  
**HOD, Dept. of Computer Science**

# St. Xavier's College

Jaipur, Rajasthan - 302001



It is pleasure to know that the Department of Computer Science is breaking new ground with 'INFORMATICA', a student journal. Computer is technology that assists students to prepare for and participate in the knowledge based economy of tomorrow. Technology improves education to a great extent and it has now become a need for revolutionizing the world. I congratulate Department of Computer Science for contributing their innovative and constructive ideas to this journal.

**Mr. Dharmveer Yadav**

Director of planning projects & University Affairs  
St. Xavier's College, Jaipur



St. Xavier's College, Jaipur is known for its excellence and emphasis on high standards of research work. The Department of Computer Science imparts technical education to students to make them globally competent in this digital and challenging world. The journal provides a platform for students to explore their skills and nurture their talents. I wish good luck and great success to all the students.

**Ms. Keren Lois Daniel**

Asst. Prof., Department of Computer Science  
St. Xavier's College, Jaipur

# St. Xavier's College

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In the present age of technological revolution, the significance of computer science as a subject is constantly involving. The prime aim of the Department of Computer Science is to prepare the students for a technologically driven market. 'Informatica', the student journal, intends to create awareness about innovations related to technology. It aims to provide a platform to the students to demonstrate their creative ideas and enhance their research skills, as well.

**Ms. Shrutika Agarwal**

Asst. Prof., Department of Computer Science  
St. Xavier's College, Jaipur



St. Xavier's College, Jaipur, offers its students a comprehensive education mechanism. It encourages them to take initiative and explore their hidden talents. The Department of Computer Science has always believed in the capability of its students and promoted research and innovation, a proof of which is 'Informatica', a student journal. It will serve as a guiding lamp for the computer science aspirants.

**Ms. Rajeev Nokhwal**

Lab Administrator, Dept. of Computer Science  
St. Xavier's College, Jaipur

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# PREVIOUS YEAR PUBLICATIONS

## SECTION B- Frontiers of Securities Aspects

### RESEARCH PAPERS (Session 2015-2016)

**1. Paper: Current Scenario of Web Development/Blogging in India**

**Authors:** Akshay Singh Shekhawat, Ritesh Saini and Vaishali Singh (*Supervisor*)

**Conference:** (ISITA) 1<sup>st</sup> International, Conference on “Mathematical Modeling, Optimization and Information Technology”, Sri Sai College of Engineering & Technology, Badhani, Pathankot (Punjab), 16th to 19th of January, 2015

**2. Paper: Security Requirements: Non-Repudiation Attributes**

**Authors:** Diksha Joshi and Vaishali Singh (*Supervisor*)

**Conference:** (ISITA) 1<sup>st</sup> International, Conference on “Mathematical Modeling, Optimization and Information Technology”, Sri Sai College of Engineering & Technology, Badhani, Pathankot (Punjab), 16th to 19th of January, 2015

**3. Paper: ICT impaction in Teaching and Learning (Perspective: School Education in India)**

**Authors:** Radhika Bihani and Vaishali Singh (*Supervisor*)

**Conference:** (ISITA) 1<sup>st</sup> International, Conference on “Mathematical Modeling, Optimization and Information Technology”, Sri Sai College of Engineering & Technology, Badhani, Pathankot (Punjab), 16th to 19th of January, 2015

**4. Paper: Cloud Education in India: Low Rate Adoption**

**Authors:** Jayant Khushalani, Surya Pratap Singh and Dharmveer Yadav (*Supervisor*)

**Conference:** (ISITA) 1<sup>st</sup> International, Conference on “Mathematical Modeling, Optimization and Information Technology”, Sri Sai College of Engineering & Technology, Badhani, Pathankot (Punjab), 16th to 19th of January, 2015

**5. Paper: Effects of Social Media On Our Lives**

**Authors:** Radhika Bihani, Ritesh Saini and Vaishali Singh (*Supervisor*)

**Conference:** 4<sup>th</sup> National Conference on Holistic Growth-Symbiosis of Theory and Practice St. Xavier's College, Jaipur, 13th February, 2015

**6. Paper: Non-Repudiation- An Emerging Security Requirement of Cloud Computing**

**Authors:** Ishita Gupta and Vaishali Singh (*Supervisor*)

**Conference:** 4<sup>th</sup> National Conference on Holistic Growth-Symbiosis of Theory and Practice St. Xavier's College, Jaipur 13th February, 2015

# PREVIOUS YEAR PUBLICATIONS

## SECTION C- Frontiers of Cloud Technology

### RESEARCH PAPERS (Session 2014-2015)

**1. Paper: Cloud Computing Threats**

*Authors:* Adhiraj Wilson Nathaniel and Vaishali Singh (*Supervisor*)

*Conference:* 9<sup>th</sup> Biyani's International Conference (BICON-2014) 14<sup>th</sup>, October, 2014

**2. Paper: Cloud Computing Enhancing Indian Education**

*Authors:* Harshit Prakash and Dharmveer Yadav (*Supervisor*)

*Conference:* 9<sup>th</sup> Biyani's International Conference (BICON-2014) 14<sup>th</sup>, October, 2014

**3. Paper: Security Issues in Social Networking Sites**

*Authors:* Pallavi Sharma and Arpita Banerjee (*Supervisor*)

*Conference:* 4<sup>th</sup> National Conference on Computational and Mathematical Sciences, Vivekanand Institute of Technology Computia-IV, 25th-26th Nov, 2014

**4. Paper: Non Repudiation: Security in Cloud Computing**

*Authors:* Diksha Joshi and Vaishali Singh (*Supervisor*)

*Conference:* 4<sup>th</sup> National Conference on Computational and Mathematical Sciences, Vivekanand Institute of Technology Computia-IV, 25th-26th Nov, 2014

**5. Paper: Problem Faced By Indian Education in Cloud**

*Authors:* Sarthak Jain and Dharmveer Yadav (*Supervisor*) and Prof. D. P. Sharma.

*Conference:* 4<sup>th</sup> National Conference on Computational and Mathematical Sciences Vivekanand Institute of Technology Computia-IV, 25th-26th Nov, 2014

**6. Paper: Software Maintenance: Challenges and Issues**

*Authors:* Aakriti Gupta and Shreta Sharma (*Supervisor*)

*Conference:* International Journal of Computer Science Engineering, Vol. 4 Dec 2014

## **GUIDELINES FOR AUTHORS**

Selection of papers for presentation will be based on detailed abstracts of maximum 250 words. Abstracts must include a clear indication of purpose of research, methodology, major results and implication and should be sent through email. The author(s) should clearly mention under what category of the conference, the paper is to be included. They should adhere to the following:

**Title page:** Title, Author(s), College, Name and Address, Contact Details etc.

**Abstract:** 200-250 Words

**Key Words:** Maximum four words

**Max. Length:** 2000-3000 words excluding title/cover page and references

**Margin:** 2.5cm of 1 inch on all sides

**Font:** Times New Roman, 12 Points, Regular

**Spacing:** 1.5 Spacing

The paper should have the following format:

- o Introduction
- o Review of Literature
- o Objective Of Research Work
- o Methodology
- o Main Text And Finding
- o Conclusion
- o Reference



# **SECTION A**

*Frontiers of Digitalization*

**RESEARCH PAPERS**

*(Session 2016-2017)*

# VIRTUAL REALITY

A technology to create a environment that does not actually exist. A sub field of computer science which gives machines the ability to act and work like human mind is called artificial intelligence.

## Electronic equipment

- Helmet
- Screen
- Gloves with sensors

## Virtual Reality Gadgets

- HTC VIVE.
- OCULUS RIFT.
- SONY PROJECT MORPHEUS.
- SAMSUNG GEAR VR.
- RAZER OSVR HACKER DEV KIT.
- GOOGLE CARDBOARD.

## Applications

- Science.
- Medical studies.
- Military training.
- Helping architects present their latest skyscraper,
- Gaming
- In education

## Advantages

- Better Memories
- Faster learning
- Creates a realistic world
- Enables user to explore places
- Immersion in history

## Disadvantages

- Equipments used are very expensive.
- Complex technology.
- May isolate students causing depression.
- Not exactly like real world
- Desensitization

# VIRTUAL REALITY

**Bhoomi Chaplot**

*BCA II<sup>nd</sup> Year Student*

*St. Xavier's College, Jaipur*

## **Abstract:**

*The focus of this paper is on Virtual Reality, its application and effects. Virtual Reality is using a technology to create an environment that does not actually exist. The term 'Virtual Reality' (VR) was introduced by Jaron Lanier, founder of VPL Research (1989). Virtual Reality came to be known in the late 1980's and 1990's. Virtual Reality helps one to run away from the real world and enter into an imaginary world, a virtual environment and form a human machine interaction. In virtual reality a person uses electronic equipment's- helmet, screen, and gloves with sensors etc. Virtual Reality is used for various purposes like scientific purpose, medical studies, and military and virtual reality applications. Virtual Reality benefits us in education, architecture, entertainment and many more. With the advancement of technology, Virtual Reality helps students to discover and explore. There are wide applications of virtual reality and problem solving techniques with virtual reality. It is the technological advancement like new forms of input devices, interface, and advancement in film, media, and television. The paper focuses on the positive and negative effects of virtual reality, Virtual criminality, ethical issues and social impact of Virtual Reality.*

**Keywords:** *Virtual Reality, Applications, Benefits, Technological Advancements, Criminality and ethical issues*

## **Introduction**

In coming future, machines will replace humans; capabilities of humans will be replaced by machines. A sub field of computer science which gives machines the ability to act and work like human mind is called artificial intelligence. Machines can act and work like beings if they are coded with proper programming. Artificial Intelligence is a branch of computer science which creates machines as intelligent a human being. Artificial intelligence is a science and skill based on studies of subject like Computer Science, Biology, Psychology, Linguistics, Mathematics, and Engineering. The father of AI, John McCarthy said that Artificial Intelligence is science and engineering of building intelligent technology, especially intelligent computer programs. The philosophy behind creating artificial intelligence is can machine work or act like human beings?

A major power of AI is in the advancement of computer functioning related with human mind, such as reasoning power, problem solving and learning capacity. AI study is highly scientific and specific, and is divided into subfield that fails to correspond with each other. Artificial Intelligence subfields have grown up and have diverse topics, for research, for problems and have wide applications. Virtual reality is another application of artificial intelligence. Artificial intelligence is basically software whereas virtual reality is software with hardware having gadgets. Virtual Reality exists in an unknown world, an imagination of events. Artificial intelligence is intelligent human like machines, computer or robots. Artificial Intelligence and Virtual Reality are next stage or future of technology.

## **Virtual Reality**

A computer generates an artificial environment which is experienced through sensory stimuli (as sights and sounds) by a person using special electronic equipment, such as a helmet, screen, gloves with sensors, In short using a technology to create a environment that does not actually exist. A HMD keeps a track on how eyes move and responds by sending a new input video. The data gloves which sensor the movement of hand and interface those movements by a computer. The other important element required for virtual reality is the software to give a real experience which feels like a real world. It is created by computers which allow us to interact with 3D world using some devices. It will make us feel that we are present mentally and physically at that place. The Virtual Reality concept has been in process from decades. People came to know in early 1960's. Early 1960' which are known as magic years of

technology, the first HMD was invented which was connected by a camera by Philco Corporation for watching dangerous situations from a place. After that in 1965 Ivan Sutherland made first VR HMD which was connected to a computer not camera. The concept which he invented is still used in Virtual Reality. VR got its name in 1980's. Jaron Lanier, employee at the Sunnyvale Research Laboratory, invented the term "Virtual Reality" in 1987th. Jaron Lanier is also known as the father of virtual reality.

Arcade Machines and Infamous Nintendo were invented in 1990's. The First arcade headsets was used in arcade rooms. Arcades were even networked together experiencing the first multiplier VR. Lanier founded a company VPL (Visual Programming Languages), which invented a full VR body suit, and, also made the Eye Phone. Eye Phone is the first modern models of VR glasses. In 1995, a new gaming experience was introduced for gamers that is Virtual Boy released by Nintendo. Though the model was a complete fail due to lack of design and showed games in two colours red and black, also had software problem.

Again in 21<sup>st</sup> century, with the increase in technology and processors VR again came into existence. Oculus Rift, Oculus VR were invented. In present VR and its technology is again in rise. In the coming years VR is the future of our modern world.

**Virtual Reality Gadgets-** There are many types of head-mounted displays.

- HTC VIVE.
- OCULUS RIFT.
- SONY PROJECT MORPHEUS.
- SAMSUNG GEAR VR.
- RAZER OSVR HACKER DEV KIT.
- GOOGLE CARDBOARD.

### **HTC VIVE**

HTC Product HTC vive has two hand controllers and 32 sensors for 360 degree head tracking. It is designed for deeper immersion than the other gadgets. A virtual reality headset HTC VIVE was developed by HTC and Valve Corporation. It was released on April 5, 2016.

### **Oculus Rift**

A virtual reality headset Oculus Rift was released in March. It was manufactured by Oculus VR..It is mainly a gaming device and main focus is on gaming.

### **Sony Play station VR**

Sony Play station VR is also called as Sony Project Morpheus. It was manufactured by Sony Interactive Entertainment and was launched on 13 October 2016. It was designed for Play station 4.

### **Samsung Gear VR**

A virtual reality headset Samsung Gear VR was manufactured by Samsung in collaboration with Oculus. It was released on November 27, 2015. It uses galaxy phone to play virtual reality games and provides 360 degree viewing.

### **Google Cardboard**

Another virtual reality gadget Google Cardboard was manufactured by Google for mainly purpose to use with smart phones. It is the lowest cost gadget in which we place our phone inside.

## Applications

It is been used for:

- **Science** -Scientific research laboratories. With the use of VR technology complex methods and ideas can be explained easily.
- **Medical studies** -To enable students to know the human body structure. One of the popular uses of VR is robotic surgery.
- **Military training** –Military also uses VR concept in all three area (navy, air force and army)The main purpose to use VR is that soldiers get familiar with different areas in the battlefield. It uses head mounted display and gloves.
- Helping architects present their latest skyscraper,
- Gaming-allow individual to experience adventures
- In education-Virtual Reality presents the boring and complex information in an easy way explaining how it works? This makes student understand the concept easily and retain it

It requires some form of head-mounted display, a computer, console or smart phone that make the 3D world and some form of input tracking, which could be hand tracking, voice or head.

## Virtual Reality in Education

Teaching and learning process hasn't changed for years in terms of teaching process or techniques applied. Although, some innovative variability in this area have been seen. Today students feel comfortable with online education, research on the Internet, watching videos on YouTube and distance learning. Clearly, next is virtual world and education- Virtual Reality a learning tool. The virtual reality in education will help students to discover, to explore and to build their own knowledge.

### Two ways of using virtual reality in classroom

- A traditional desktop set up in which student explores the world using computer, keyboard and mouse.
- It requires the student to wear a head mounted display referred as HMD and data glove used for interaction within the virtual world.

VR machines can be used for education purpose. Schools and colleges can take this opportunity as an advantage for helping students in learning and understanding concepts. Using tools, 3D experience will bring the reality and give them a better understanding of the scenario. Their experience will be meaningful and personal.Virtual Reality technology can be used to handle teen's social problems. Using Gadgets kids come out of there shy behaviour and opens up to their friends and peer group. Some were able to understand technology and overcome learning difficulties In the 1960s, lecturer Edgar Dale developed the Cone of Experience, in which he depicted that students tends to remember only 20 percent of what they are hearing , 30 percent of what they are seeing and 90 percent of what they do are doing.

A study found a 76 percent increase in learning outcomes that when student used a gamified (Lobster) lab simulation and a n increase of 101 percent when it was used in combination with traditional teaching methods. Imagine if we could improve the impact of mentors all over the earth by 100 percent by simply students the right VR tools to teach and understand with. The capability to begin practical knowledge in the classroom without actually living it makes the experience helpful. Rather than listening to boring lectures, and writing students can get a real experience but in a virtual world. Students will enjoy working with virtual worlds and this experience can be highly motivating and engaging. It will generate interest in a particular subject.

Virtual Reality exposes students to rising technologies and encourages them to become not just consumers, but creators of content. According to the report, engineering students of Pennsylvania State University were given a task of virtually assembling an object. They completed the project more efficiently using a VR headset and a hap tic glove, compared to the students who used a mouse, keyboard and computer program.

Students tend to respond to computer learning faster than other classroom methods of teaching. Virtual reality learning is a best way of engaging students with a particular subject in which they are comfortable.

The pedagogies of constructivism and game-based learning prove that children learn best by doing or by being what was said by Corbett. He also said that students shouldn't just read about history, they should be historians. Students shouldn't just learn archaeology, they should be archaeologists.

Students can feel and control objects within a virtual world in order to have better understanding. They are able to relate with data sets, complex formulae and abstract concepts that they may have earlier found inaccessible.

### **Virtual Reality Teaching**

- Less Expensive
- Requires less space
- Provides real time feedback

### **Advantages**

- Better Memories
- Faster learning
- Creates a realistic world
- Enables user to explore places
- Immersion in history

According to one of the UK's leading online learning companies, Virtual Reality could create a host of new interactive and immersive experiences to deliver online learning courses anywhere at any time, so that students will no longer need to go to school to attend classes with courses being delivered through a Virtual Reality environment and leave their home.

Virtual Reality is our Reality; it brings the truth of the diversity of all learning matters in to the hands and minds of everyone. As Arthur Goickhman, CEO of Surreal VR, has said that the ability to truly experience something as if it was real, be it a historic setting or the inner organs of our bodies, and makes VR an unparalleled resource for education It is the future of the coming generations of learners.

### **Disadvantages**

- Equipment used are very expensive.
- Complex technology.
- May isolate students causing depression.
- Not exactly like real world
- Desensitization

### **Conclusion**

Virtual Reality in Future-Till today majority of us have neither experienced virtual reality nor used the tools. But in today's era it is impossible to stay away from technologies. Samsung, Sony, Facebook, HTC, Google all are launching their VR headsets. With this upcoming technology, watching movies, playing games, learning and social media will not be the same. Game development companies and film makers are already implementing these technologies. Using VR tools people will be able to rebuild their experience. VR allows us to do the unusual things, and allows us to escape from our everyday routine and live in our dreams .

### **References**

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2. Virtual-Reality, Available at- [www.vrs.org.uk/virtual-reality/what-is-virtual-reality.html](http://www.vrs.org.uk/virtual-reality/what-is-virtual-reality.html)
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5. Available at- <http://www.vrs.org.uk/virtual-reality-education/>

# Digital India

## The Future of India

### Introduction

Digital technology is now being progressively used in our day to day life, from simple departmental stores to government organizations. These technologies help us to connect with one another and could be utilized as a way to share information and solve issues and concern. Digital India programme is initiated with the dream to transform India into digitally empowered society and knowledge economy. We have come long way From 1986 the year when Internet services were first introduced to the year 2015 when the digital India programme was officially announced. Digital India with its 3 key vision, 9 pillars and different web and mobile application aim to bridge the dissimilarities between digital 'haves' and digital 'have-nots.'



### Pillars of Digital India

These nine pillars are under the umbrella-shaped project which itself is prominent segment of Digital India initiative. These pillars cover significant scheme like high-speed internet, e-governance plan, smart cities, etc. which would assist in eradicating the digital divide present.



### Web and application services:

- Digital locker
- MyGov Mobile App
- Attendance.gov.in
- Swachh Bharat Mobile App
- E-Sign Framework
- E-Hospital
- National Scholarships Portal
- Transfer of Text to Speech in 9 languages
- Olabs
- E-payment portals



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# DIGITAL INDIA: THE FUTURE OF INDIA

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## **Abstract:**

*Digital technology is now being progressively used in our day to day life, from simple departmental stores to government organizations. These technologies help us to connect with one another and could be used as a way to share information and solve issues and concern. Digital Technology is the key to citizen empowerment and expeditious economic growth across the world. With the initiation of Digital India program, our Prime Minister envisages to transform our nation by creating opportunities for people of India by giving every citizen of India access to digital services and information. According to the Prime Minister, Digital India is the NEXT BIG THING that India is going to witness. Digital India with its three key visions and different applications and programs will bridge the dissimilarities between digital 'haves' and digital 'have-nots' to make sure that government services reach every household, whether it is a rural or urban area to have a lasting developmental impact. All the digital services provided by Swachh Bharat app to e-hospital, will furthermore fill the void between developed and underdeveloped parts of India. In brief, the motive behind this program is to equip India for a digital future ahead of us. This paper will further discuss the application and services of the Digital India program.*

**Keywords:** *Digital Technology, Digital India, Digital 'haves' and Digital 'have-nots', 'Swachh Bharat app.*

## **Introduction**

A competent governing body depends upon a good communication platform to interact with its citizen. This is one of the biggest problems faced by Indian government due to India's widespread geography, massive population, and extensive lingual and cultural diversity. These problems could be overcome by recently launched Digital India program, which will connect population of 1.3 billion through a digital platform irrespective of reason whether it's geographical, climatic or political. Digital India with the use main key vision and its umbrella program will ensure the empowerment of country digitally in the technology department.

The primary focus is to minimize the regulation of soft copies of documents and enable the managing or sharing of papers as e-documents. This with numbers of apps and portal developed by the government will ensure that the government service is available to every citizen whenever they need/require. This paper discusses the visions and services associated with digital India, which will prepare the nation to be well connected, well planned and to be more productive in future.

## **History**

It was the year 1986 when the internet services were introduced in India for the very first time. Until which, there was no clarity in work done by the government. The first public internet access in India was established by VSNL almost 20 to 25 years ago via dial-up services which also gave a kick-start to the process of digitization. In the year, 1996 newspaper agencies like TOI and The Hindu and some other started their website. It was the same year when Rediff.com in Mumbai inaugurated the first cybercafé. In the later year (1999-2000) with the passing of Information Technology Act by parliament, the foreign portal like Yahoo and MSN created the site to be used by Indian citizens.

With the passing of Act sites like Bazee.com (model of E-bay), Tehelka.com (the site that exposed the cricket betting scandal), e-chaupal, NSE (online stock trading company) and many other sites were launched. It was the mid-1990s when the idea of e-governance took a broader aspect for wider sector-based application with insistence on citizen-centric services. But this program was initiated until the year 2006, but was ineffective. In the later years with the idea to create a transparent and speedy government and which is presumed to be fully digitized in future, the Digital India program was introduced on 1st July, 2015.



## **Visions of Digital India**

With the aim to digitally empower India initiative of Digital India was taken. This point behind this initiative is to have Indian talent, and Information Technology together to have a better tomorrow for the nation.

### ***The project emphasizes on three visions:***

#### **Digital Infrastructure as an advantage to every citizen:**

To provide a digital framework as an advantage to every resident, the key elements are:

- Provide high-speed Internet access to every corner of the nation whenever needed. This would help to diminish the digital divide present among the different region of India.
- Ensure that every person has its unique digital identity which is to be unique, singularly sufficient and robust enough to disallow fake and duplicate record.
- With growing use of mobile phone in a rural sector, the aim is to provide access to government service to public electronically like online payment with end-to-end transactional experience, which would help in the advancement of financial literacy among the citizen.
- Common Service Centers are created at village level so as to government, private, social and financial service for the rural population in the remotest corner of our country.
- To have a shareable confidential space on a public cloud where you can digitally store documents and certificates issued by the government and also share the documents.
- National Information Security Policy is put in place as all assets and identity are to be digital so the online platform must be safe and secure.

#### **Governance and Service on demand:**

E-governance has steadily evolved over a decade with the help of a vast number of the initiative taken at a different level to improve the access and delivery of service present to public. The elements which are vital for delivering E-governance and related service are made accessible on demand to all citizens. These elements are:

- As access to some services often involves document, approval and clearance from certain authorities outside the department concerned. So ideas is to create single window access for such services so as simplify things for the citizens
- The focus today is on the application for e-governance in such a way that it is accessible through any device present whether it's a laptop or a phone or a tablet.
- The application in the present world should be designed considering cloud technology which as a result could provide flexibility, agility, cost efficient and transparency. The target is to encourage the use of cloud platform for addressing portability issues so that we could ensure the continuity of citizen entitlement across the country.
- We know that when we start a business, we need to get many formalities done like getting a permit, electricity for the site, to register the property, to get the loan, etc. the so idea is to transform these services digitally through a single window mechanism like e-Biz, e-trade, etc.
- Making the transaction to government services electronic and cashless so as to restrict the involvement of middlemen who other subvert the system which would result in the medium of payment becoming more friendly and transparent.
- Leveraging use of geospatial information system (GIS) for decision support system and development.

#### **Digital empowerment of citizens:**

The digital program by definition promises to reconstruct India into a digitally equip the society by concentrating on digital literacy, digital resources, and collaborative digital programs. Digital India program also stresses extensively on digital literacy and availability of digital services in all Indian language. The key elements are:

- The most important paramount it individual level is digital literacy so that the citizen would be able to fully exploit the digital technology to empower themselves and become economically sound.

- To have digital resources truly accessible they should be readily available and navigable to everyone. Digital resources are created or implemented along open resources so that they are widely available and inexpensive and to be easily customizable and usable without any problem.
- It should also be seen that the digital resources offered are available in Indian language too as the knowledge of English language are limited to small section of the population. So an application is developed with processing tools and means to promote human-machine intercommunication without any language barrier.
- Establish communication through digital platform so as to provide services to citizen and interact with them round the clock instead of reaching them now and then. With collaborative, digital platform citizen could give suggestion and feedback on the service provided to them by the government.

### **Pillars of Digital India**

The nine pillars are part of the umbrella-shaped project which is under digital India initiative. These pillars cover significant scheme like high-speed internet, e-governance plan, smart cities, etc. this program would help in digital inclusion in the country and would assist in eradicating the digital division.

The nine pillars are as followed

#### **Pillar 1: Broadband Highway:**

This is one of the most important pillars as if successful will connect rural, urban and government department with the internet. This could be achieved via the optical fiber network. With this mobile app and web-based portals, that would help to access online information.

#### **Pillar 2: Universal accesses to mobile connectivity**

This pillar focuses on the network penetration and to fill the gaps in connectivity or network coverage as still many villages of India do have mobile coverage. This would help the general crowd as they will be able to access online government services with help their mobiles.

#### **Pillar 3: Public Internet Access**

The mission of this one is to provide national rural internet to remote villages. The two components of Public Internet Access are Common Service Centre and post office.

#### **Pillar 4: E-Governance**

The aim is to transform all manual work into fully automation system such as online access to applications and tracking interface, analyses and resolve frequent problems and much more. Also have all the database and information digitalized, so the workflow inside the government department and agencies are automated.

#### **Pillar 5: E-Kranti**

The e-Kranti is to completely focus on the digital knowledge programs where service like education, farming, hospital, financial and much more would be delivered with high bandwidth internet so as to level up the digital literacy among the citizen

#### **Pillar 6: Information for All**

With this pillar, the aim is to convey information related to government services to the citizen via mobile apps and website and have a two-way communication via social media and the internet for the suggestions and exchanging ideas with the government.

#### **Pillar 7: Electronic Manufacturing**

This pillar focus is on the encouragement of electronics manufacture across the country with the support of skills and digital technologies. The empowerment of building through the Internet of Things will enable creative workshops that demonstrate data-driven operational excellence and decentralized production control systems within and beyond the physical factory walls.

#### **Pillar 8: IT for Jobs**

With this pillar, the government is preparing to provide teaching and training skills to the youth for employment opportunities in the IT sector. The primary focus is to train people from the smaller town and villages for jobs in IT sector.

### **Pillar 9: Early Harvest**

This will generate short-term project to convert manual service into e-service like

- Setting a platform for message-based information.
- To have bio-metric attendance instead of manual one.
- To have public Wi-Fi hotspots.
- To convert books into the e-book.

### **Application and Services under The Digital India Program**

The Digital India program offers several original application and web-based portal so as to provide government service available digitally.

Some of these applications are:

#### **Digital Locker**

As one of the key initiatives under the Digital India programme it intends to cut down the usage of real documents and encourages sharing of documents as e-documents across different agencies. The citizens can upload their electronic document and digitally sign them with e-sign facility and then these document could be shared with the government organization or other concerned departments.

#### **My Gov Mobile App**

This app is created to build a partnership between citizen and government with the help of technology. Through this app, the government aims to establish an interactive relationship with its citizen by discussing citizens' problem and their suggestions on various governments program and policies.

#### **Attendance.gov.in**

This website is created to make a database to keep the record of attendance of government officer across the country through the conventional biometric attendance system.

#### **Swachh Bharat Mobile App**

This mobile app is developed to encourage more citizens to associate with the Swachh Bharat cause. Through this app, the government urges the citizens to take Swachh Bharat pledge. With this app you can click a picture of waste or garbage nearby you, the app then will upload the image on Swachh Bharat National Server along with its location. Then the national server will process the image and will grade the waste into red (urgent action), yellow (taking notice) and green (clean area). Through this app, you can also see activities and challenges happening in your area and can also invite your friends.

#### **E-Sign Framework**

E-Sign is an online service for the digital signature to sign a document by an Aadhaar, card holder. This software is devised for using the digital signature of signer whose identity is confirmed using Aadhaar e-KYC service as the way for verification. E-sign framework helps in issuing digitally signed certificates and requested document whenever required.

#### **E-Hospital**

E-Hospital portal is created by hospital management system for citizens to avail health care services like booking an appointment, getting medical reports online, enquiring of availability of blood in the blood bank, etc.

#### **National Scholarships Portal**

This portal establishes a single window mechanism for scholarship scheme across the India provided by central government for students belonging to financially weak and disadvantaged category. Through unique id, it can also ensure that one student could not get more than one scholarship.

#### **Transfer of Text to Speech in 9 languages**

It is a program for non-English speaking citizens so that they could provide information regarding government's policies and services in their native language on their Smartphone.

#### **Olabs**

It is a module that will provide an easy way to the students so that they could experiment and learning activities over the internet (online) of different subjects.

#### **E-payment portals**

E-payment like PayGov created so that there is a convenient way to government bill and taxes online. When the transaction is completed will authorize bill receipt online which citizen can save as a source.

**Conclusion**

The Digital India program is said to be one the most aspiring project launched by the government till now. With the idea of transforming the government into fully automated one with the help of e-services and e-governance. With Digital India program, the government is expected to be more transparent and faster with their work and expected to meet up to the citizen's needs. This program would also help in minimizing the digital divide with present across the country (in-between rural and urban area) as with the help of this program government would be able to provide its service to the remotest villages across India. With the escalation of digital literacy among the citizens, more job opportunities are expected in technical departments which will in future help in improving India's economy and would also help in empowering society.

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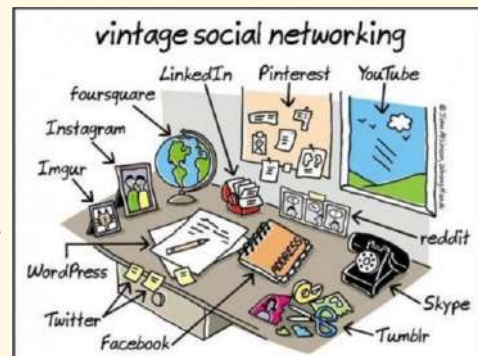
# SOCIAL MEDIA A THRUST ON SOCIETY

## Introduction

- Social media has been a major controller in trending the lifestyle of the present youth.
- Social Media, for the most part, nowadays is referred to as a relatively cheap and extensively available electronic tool that enables anyone to issue and approach information, participate on a collective issue or create a relationship.
- Social media makes people addictive.
- Social media is sometimes responsible for the riots between people of different communities due to its vulnerable posts.

## Obstacles

- Social media is on its peak heights of development but it lacks the most important thing i.e. 'privacy'.
- Social media posts sometimes leads to riots among peoples and sometimes it leads to a critical situation due to misuse of images, photos etc.
- Most companies are unable to measure the final conclusions of their advertising on the social media.



## Methods

- Reducing the consumption of social media to 50% as to avoid the addictiveness among people.
- Avoiding sharing of content relating the risk involved in privacy sharing.
- Reducing the dependency of businesses on the social media.
- Beware of hackers and strangers.

## Conclusion

- Social media is very useful in giving the world a new shape if used appropriately.
- Social media should be consumed in a limited manner so as not to get addictive.



# SOCIAL MEDIA – A THRUST ON SOCIETY

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## **Abstract:**

*Social media is a platform for people to discuss their issues and opinions. In today's world social media have a great brunt over the whole society whether it is youth, businessman or a normal person from a street, every person is conjoin to one another. With the nourishment of social media the world is on the edge of abducting the fact that “the evolution has begun and it will be more withal in the imminent future”. Imprint of social media on education. 90% of the colleges use social networks. Technology is on his zenithally position of development as the use of small communication devices which can be used anytime, anywhere by any person. Some of the small communication devices include i-pad, laptops, and moreover simple mobile phones which have the basic internet features so as to access the information anytime and from anywhere. Positives effect of social media. Social media acts as an interface in reaching people and helping them. Negative aspects of social media. The most harmful effect of social media is distraction. The inappropriate information on the social networking sites causes people to choose the wrong path.*

**Keywords:** *Social media, Society, mark of social media, Positive aspects, and Negative aspects*

## **Introduction**

In today's world, the chief part of a person's life is Social Media, from buying stuff online to email, education & business tool. It plays a crucial part in changing people's lifestyle. Social Blogging & Networking sites are two things on Social Media where people can easily connect to one another. Seeing that the transformation of social networking sites such as Facebook & Twitter as a way of means for News, Journalists & their organizations have carried out acts that have been off the charts. These sites have become an everyday procedure to check for the people. Social Media, for the most part, nowadays is referred to as a relatively cheap and extensively available electronic tool that enables anyone to issue and approach information, participate on a collective issue or create a relationship.

## **Mark of Social Media on Education**

According to the surveys conducted in the recent years, Almost 90% of the students today use Social Networks. A swift advancement in technology has taken place since the pioneering of Small Communication devices for checking social media anytime at anywhere, as these include pocket computers, laptops, I Pads, and even mobile phones. For the objective of education, Social media has been used in a contemporary way. A better way of using this tool should be taught to the students, in educational classes media that is being used for talking to each other on texting should be used in other productive ways, instead. With the assistance of social media, students can easily contact each other, communicate, and share information through Face book, Twitter or Instagram etc. Also, it is good for students to do some practical work instead of paper tasks. Social media has grown much collaboration between students and also its quality. Blogging is a great way for students that they can use for themselves and for their teachers too to increase their skills. Online exams are also available for the student who enhances their knowledge level.

### **Purpose of Internet Usage:**

User	Percentage
Mail	33
Surfing	26.8
Chatting	18.7
Social Networking	17
Other	4.5
<b>Total</b>	<b>100</b>

Table 1

The table that is shown above clarifies that the usage of internet for the people for mailing and surfing was 33% and 26% respectively. Largely the two reasons why people in India use internet is, for Mailing and for Surfing. Social Networking sites in India are spreading rapidly but it is yet to reach the expectation of Global Level. Only 17% described social networking as their main reason for Internet Usage.

Other reactions were downloading material online, purchasing goods online, studying and reading electronic books.

#### **Membership in social networking sites:**

Member of SNS	Percentage
Yes	95.7
No	4.3
<b>Total</b>	<b>100</b>

Among the Indian youth, 95.7% of the people are attached through social networking. This figure is getting high by the day. Only 4.3% of the people are there, who are not connected by Social Media?

#### **Positive effects of Social Media on Education –**

1. Social Media helps the students to properly talk to each other in sense of Class Ventures, Assignments or for help with homework etc.
2. Students who do not take part actively in class and participate in class discussions can easily share themselves on Social Media.
3. To stay updated, Teachers can post material, homework, assignments etc. and stay in touch with students which can be very feasible for the students.
4. It has been observed that Social Media Marketing has been a career option for some time now, and gives lots of insights. Social Media Marketing prepares the young people to become successful Marketing Entrepreneurs.
5. The chance for educators to teach good Digital Citizenship by the accessibility of social media has now become common and it is also good for the Use of Internet for productivity.

#### **Negative effects of Social Media on Education –**

1. The first negative effect that is the most common these days is, The Addiction and distraction by Social Media amongst Students. Because the teachers were not able to see who was attentive in class and who was not.
2. The collapse of Social Media happens by the privacy issues like posting personal stuff online on websites.
3. Many cases has happened where the information available and posted online has led the students to the wrong side.
4. Because of Social Media, students have started losing the ability to talk in person and communicate face to face to each other.
5. Many bloggers and writers type wrong material and wrong stuff on Social Media which may lead to a problematic situation in the education system.

#### **Mark of social media on society**

Social media has a very deep impact on our society. There are many social networking sites which are getting very popular from past time period. Some networking sites have generalized the technology of enhancing the interaction of peoples on web. Social media provides the opportunity for peoples to interact with their old colleagues, friends and also affect the lifestyle of peoples in a very wide range.

According to the survey conducted in September 2014 more than half of the online adults of age 65 and above use 60% of Facebook which represents 31% of all seniors.

#### **Positive aspects of Social Media on Society –**

1. Social media improves the communication of peoples by providing them the opportunity to interact

with the peoples of worldwide.

2. Social media is a very key factor to share ideas of peoples beyond the geographical boundaries.
3. It also provides the opportunity to authors to connect them to their clients in a very easy and efficient way.
4. Social media acts as a mediator to unite people of different platforms to the common ground for the achievement of the common goals, which leads to positivity among the group of people.
5. Social media contribute towards spreading awareness among people by organising campaigns, advertisements which help people to stay up to date to the content.

#### **Negative aspects of Social Media on Society –**

1. Irrespective of the fact that social media is very useful to people it's most harmful effect is: 'it creates a total addiction making it impossible to heal.' People spend most of their time on social media which ultimately results in loss of concentration and focus from a particular task.
2. Social media can have the direct access to the people's mind; in that case it can easily affect the behavior of children and also the teen in a very large amount.
3. It also abuses the society by hacking into their privacy.
4. It also affects the family bonding of an individual as he/she spend most of their time interacting with the peoples of the outside world.
5. Some opposing posts like images, videos which can be easily misused by other people on the web.

#### **Mark of social media on business:**

Social media is a buzz that includes business, organizations and brands which helps to maintain friends and make connections possible with people throughout the world. Social media helps an organization to improve their monopoly over the market by promoting their products through advertisements.

It also provides business a 2 way communication i.e. between the stockholders and the company. Social media emerges as a light in the dark for the upcoming businesses and helps them to promote their businesses in order to maximize their profits through social networking sites. Social media helps a 'brand' to make his voice in the market of sell and exchange.

#### **Social media are used in various businesses functions, some of them are:**

1. Marketing
2. HR
3. Creative
4. Operations/strategy
5. Business development.

#### **Positive aspects of social media on Business:**

1. Social media helps better in finding the conclusions of the people on a particular brand by finding out their likes and dislikes.
2. It also helps business to promote their business activities.
3. Social media helps the business to make new customers by providing them with the better facilities.
4. It helps the various businesses to compute the statistics of the market as to compete with their rivals in the business market.
5. It helps in increasing awareness about the brands.

#### **Negative aspects of social media on Business:**

1. Social media is not risk free as some fans and followers are free to post their thoughts on the organizations site which can lead to the failure of the organization.
2. Social media has come to a point where a organizations site can be easily hacked and important information can be leaked.
3. The wrong marketing strategy by an organization on the social networking site can lead to its permanent shutdown.
4. Getting in touch with the social media is a very time consuming. An organization must assign person to look over to the company's profile and fill it with the vital content that can be easily understood.
5. Most companies are unable to measure the final conclusions of their advertising on the social media.



**Mark of social media on youngsters**

Social media has emerged as a very popular tool to youngsters which they call 'cool stuff'. Youngsters are day to day taking part in evolution of social media for getting connected to their friends and groups by using different devices every day. It's been constantly seen over past few years that youngsters are connected to their college and school friends but nowadays it's has been seen that with the help of social media they are connected to their known but also to unknown people through various social networking sites, instant messaging et. It's been seen that throughout the world youngsters use web, mobile phones and online gaming to gather information and to communicate with each other.

**POSITIVE IMPACTS OF SOCIAL MEDIA ON YOUNGSTERS –**

1. Social media acts as a very useful tool in making youngsters to stay connected with each other.
2. Vital information can be shared with each other by the means of social networking sites.
3. Social media helps the youngsters to find out the support that they lack in traditional relationships, especially for teens.
4. In a serious situation youngsters may seek help from social media networking sites to collect advice and vital information.
5. Youngsters may seek help from social networking sites seeking help related to their carrier objectives and goals.

**NEGATIVE IMPACTS OF SOCIAL MEDIA ON YOUNGSTERS –**

1. In the world of hackers, it's been very difficult to figure out who is “stranger” especially in the field of social media.
2. Cases like murder, robbery, kidnapping can be easily done by sharing the contents which are necessary through the means of social media.
3. Cases related to humiliation of youngsters by the adults and luring them to meet them are still getting there pace into the police stations.
4. News about the serious health issues among youngsters caused by spending lots of time chatting on social networking sites are becoming common.
5. Some highly influenced content affects the youth in such a way that they get violent and get forced to take inappropriate actions.

**Conclusion**

As the rapidly growing technology of social media it's become a day to day routine of the people to use social media, people has been into serious addiction for the social media. Its different fields have different impacts on the people. Business uses social media as a means to enhance their quality of the product and to increase their monopoly over the market by carrying out various marketing strategies according to the nee of the people. Youngsters are seen using the social media frequently to stay connected to their friends worldwide. Everything which is positive has also some demerits like social media if wrongly used can harm the education system and business productivity can be diversely affected by wrong convey of information. It can harm the society by invading in people privacy and also by some influencing content which force youth to get violent and take inappropriate steps. Use of social media is better but it should be used in such a manner that is healthy for a person life and people should not get addicted to its use.

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# DIGITAL LOCKER



## Introduction

Digital Locker Service was launched by the government of India on 1st July 2015 to provide a protected online space to the citizen of India. User can store various personal documents such as PAN cards, voter id and various e-documents that was and will be provided by the government there is also an associated facility for e-signing documents. It is one of the initiative under the digital India program this was released by the IT Department of India. To sign up user must present an adhaar card and mobile number linked to it.

## Advantages

1. Reduces Documentation.
2. Create Employment.
3. Cost Effective.
4. Make India Green & Paper Free.

## Disadvantages

1. Power Failure.
2. Loss Of Corporate Sector.
3. Security Risk.
4. Not Reliable For Rural People.

## How to Register

- To use digital locker first user has to sign up using his/her adhaar number.
- Once the user enter his/her adhaar number an otp will be sent to his/her register number as password for the locker for signing in for the first time.
- Then the user can create his/her own password and access accordingly.

## How Digital Locker works

- Once the user register the services then he/she can easily upload their documents.
- As well as can be requested by the requester to provide them a require documents.
- Once user get in its account there are certain section which user can.
- Access according to users need such as uploaded, digital, issued documents.

# DIGITAL LOCKER

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## **Abstract:**

*DIGI LOCKER is a digital locker service launched by government of India on July 1 2015. In this, government provide the online space of 1gb to store personal documents like PAN card, university certificates, voter id cards etc. which is linked to unique identification (UIDAI) authority of India. Digi locker is composed of stakeholders such as citizens, issuers, requesters. Through this service, one can store and access our stored documents anytime, anywhere in the world. Structure of digi lockers comprises of various sections like my profile, myrequester, myissuer, directories according to which one can access the digi locker services. This service empowers India digitally, reduces the documentation and on the other hand creates employment on large scale. However, problems occur in accessing it if you forget your password, risk of cyber crime, power failure and not reliable for rural people are some of the demerits of digi locker.*

**Keywords:** *Digi locker , citizens, E-documents, UIDAI.*

## **Introduction**

The first step to a paper free India-Digital locker service was launched by a government of India on July 1 to provide a protected online space to the citizens of India having a space of 1GB and is linked to the unique identification authority of India. User can store various personal documents such as PAN cards, vote rid cards and various e-documents that was and will be provided by the government.

There is also an associated facility for e-signing documents. It is one of the initiatives under the digital India programme. This was released by the department of electronics and information technology, government of India. To sign up the user must possess an Aadhaar card and a mobile number linked to it.

## **Objectives of Digital Locker**

- i. To make digital empowered country-Increase awareness and use of digitization make the country economically and digitally empowered.
- ii. To minimize the use of physical documents and make them electronically available-Handling large amount of documents, their maintenance as well as transferring them here and there is really hectic. With the help of this service the documents can also be transferred easily electronically .So, it is a great step to make a paper free and green India.
- iii. To enable e-signing of documents-Going here and there in government departments for documents signing is really difficult. Getting documents from the issuer and signing them electronically makes several steps easier for the user.
- iv. Secure access to government issued documents-Sometimes the documents can be accessed by the wrong people and certain wrong advantage can be taken by them.
- v. Ensuring the authenticity of the documents and thus getting secure from fake documents-Some time fraud is possible through fake government agencies that's why using this service user only gets in touch with the authorized government agencies and also the problem of bribe is also overcome through this. Thus providing secure access to government issued documents
- vi. To reduce administrative overhead of government agencies-Separate departments have been made for different kind of paper work thus to resolve this single platform has been provided by this service and all work has been done at this platform here only.
- vii. Anytime, anywhere access-This is one of the greatest objective as there is no foundation of place and time to access the documents as your documents are online and can be accessed anywhere, anytime in the world.
- viii. Well structured standards to make the use of application easy and straight-The format of the digital account is very simple and straight thus preventing the user from getting confused and enables them to use the services easily.

- ix. Ensure privacy and authorized access-Nobody except you can access your documents as it is password protected and the password is with the registered user. so except the user nobody and can access it.

## STAKEHOLDERS OF DIGITAL LOCKER

There are 3 stakeholders of digital locker:

- i. **CITIZENS:** Citizens can store or access their documents. Citizens can store their scanned documents such as income tax statement sheet, passport, and mark sheets. One can use digital locker to submit a digitally signed copy to a government agency. However, agency must be registered as a requester with digital locker.
- ii. **ISSUERS:** Various agencies are registered with the digital locker as issuers and they can issue e-documents to the citizens. These agencies include income tax department, CBSE, registrar office.
- iii. **REQUESTERS:** A requester is government departments that offers citizen services or requires documentation from citizens. In order to provide government services agencies require individual identity, age or nationality for which various supporting documents are required. Requesters request for such documents to provide the services.

## STRUCTURE OF DIGITAL LOCKER

Digital lockers comprises of following sections

- 1) My Certificates-This section is divided into 2 sections:
  - i. Digital Documents-This section contain URL'S of the documents issued by the government to the user. Through this section user can easily visit to the issued documents by just simply clicking on the URL of the documents.
  - ii. Uploaded Documents: This section contains documents uploaded by the user. The uploaded document must not be of more than 10MB in size. Only pdf, jpeg, jpg, png, bmp file types can be uploaded. Here in this section user can have the view of documents upload by them.
- 2) My Profile-This section contains the complete information of the user as available in the UIDAI database. All the information such as name, phone no. etc are present in this section.
- 3) My Issuer-This section contains the name of the issuer as well as the number of documents issued by the issuer to the user.
- 4) My Requester-This section contains the name of the requester as well as the number of the documents requested from the user. Such as request for certain identification documents.
- 5) Directories-This section contains the complete list of registered issuers as well as the requester along with their URL'S.

### How to Sign up For the Locker:

To use digital locker first users have to signup using his/her Aadhaar number. Once the user had entered his/her Aadhaar number an OTP will be sent to the registered number as the password for the locker for signing up for the first time. Then a user can setup the password of his/her own choice easily in the future and access it accordingly.

### HOW DIGITAL LOCKER WORKS

Once the user registered the service then he/she can easily upload their documents as well as can be requested by the requesters to provide them required documents. One can access all the documents available in digital locker. Once you get in your account there are certain sections which user can access according to your need such as uploaded documents where one can access the documents uploaded by user, digital documents from where all the URL's of the issued document are present. All the exchange and uploading of documents are to be done on the server. So

various user, requesters, issuers can communicate through this service.

### **ADVANTAGES OF DIGITAL LOCKER**

- A. ACCESSING DOCUMENTS**-We can easily access and store document anytime, anywhere in the world. Thus preventing from forgetting of the documents as well as transferring of documents manually. Thus it makes a paper free work and India too.
- B. REDUCES DOCUMENTATION**-Free from carrying documents and maintenance of records. Thus reduces managing of papers.
- C. CREATE EMPLOYMENT**-Various IT professionals are needed to manage the services and thus enhance employment. Various works in this category such as maintenance of the security of the server as well fixing any bugs if appeared, updating etc. are required to do.
- D. COST EFFECTIVE**-Reduces the cost of maintaining and transferring the records.
- E. DIGITAL EMPOWERMENT**-This service enables citizens of India to use digital resources and thus making them efficient to use the services and empowers them digitally. It's one of the most crucial steps in the direction of making the country digitally empowered.
- F. PAPER FREE INDIA** -This service prevents the use of the paper and thus prevents deforestation. Thus contributing towards "GREEN INDIA" too.

### **DISADVANTAGES OF DIGITAL LOCKER**

- A. POWER FAILURE**-One cannot access to the services of the digital locker if power is not there. If no power no machine can work and if no machine can work no access to the digital locker account.
- B. FORGOT PASSWORD**-One will not be able to access the locker account if user has forgotten the password.
- C. SECURITY RISK**- Account can be hacked and thus all the important documents are accessible to the stranger leading to wrong utilization of the information. Cyber security is always been a risk for the online services and a great advantage for the hackers to utilize in a wrong way.
- D. NOT RELIABLE FOR RURAL PEOPLE**: It's quite difficult for rural people to use this service as they are quite far away from the digital world. Rural people have no idea to work upon the machine and thus create a great problem for them to use and take time to adopt the new change.

### **CONCLUSION:**

Digital locker is the online storage service that empowers India digitally. It is very cost effective as it reduces the cost of maintaining and transferring of records. It makes accessing of documents very easy as the documents can be accessed anywhere, anytime in the world. It gives employment to IT professionals. However it's not reliable for the rural people to access it because they are not used to digital world but on learning that how to use the services is one of the mottos of the government as it empowers them and thus results in digitally empowered country. It also reduces the administrative overheads of government agencies created due to paper work and make it easy for the citizens of India to receive services by saving time and efforts as their documents are available anytime, anywhere and can be shared electronically. This also enables government of India to provide services seamlessly, without delays or harassment or corruption to all sections of society. This service is also time saving as moving here and there in different departments takes time as it enables everything at single platform thus prevents waste of time. Great step has been taken by government of India to make India a digital empowered country.

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# Network is NETWORTH

A Network is defined as a group or system of interconnected people or things.

## SSL {Secure Sockets Layer}

It is a kind of digital certificates embedded in the code of a website used to secure content of website.

There are 7 possible ways in which internet companies offer connectivity to us:

- 1-LAN - Local Area Network
- 2-WAN - Wide Area Network
- 3-WLAN - Wireless Local Area Network
- 4-MAN - Metropolitan Area Network
- 5-SAN - Storage Area Network, System Area Network, Server Area Network, or sometimes Small Area Network
- 6-CAN - Campus Area Network, Controller Area Network, or sometimes Cluster Area Network
- 7-PAN - Personal Area Network

Wireless LANs can contain many different kinds of devices including

- mobile phones
- laptop and tablet computers
- Internet audio systems
- game consoles
- Internet-enabled home appliances

## Issues with Wide Area Networks

- Expensive
- Legal jurisdictions. Disputes can arise between governments
- undersea network cables
- Permissions are not easy to get

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# NETWORK IS NETWORTH

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## **Abstract:**

*Successful implementation of networking architecture requires proper planning and understanding of emerging risks, threats, vulnerabilities and their possible countermeasures. Way network brought change to technology and the way today developers and users have accepted the change by using the most out of it, Advancement always comes with some major health risks. Security is one of the most vulnerable threats. Network's versatility depends on its different uses and its different types. Advancement always takes a lot of investment, which results in an expensive R&D which further concludes into exorbitantly priced products. Government rules and regulations plays an important role as they have certain guidelines which manufacturing companies have to follow in order to get licenses for the products that companies come up with. Different countries have different norms and standards that make it more difficult to maintain unified technology around the world. Increasing demand of commonly used network [INTERNET] by industries and public, increases demands for more bandwidth. The target of network is to keep the world connected, which makes tasks a lot easier and faster. The goal of this paper is to highlight how fast network industry is growing these days, what kind of difficulties industries face while research and even after research. What industry is working on these days, and there future plans.*

**Keywords:** *Network and its types, Advancement, Difficulties, Security threats, Faster Growth, Prompt Requirement and delivery.*

## **INTRODUCTION**

With a layman's perspective, a network is defined as a group or system of interconnected people or things. If we move further what we see is future development which is a must but it would be left incomplete with proper group of people (by group of people I mean a group of people who can be anywhere in the world, it is not at all important to personally meet those people and it was next to impossible without proper piece of technology). To overcome this advancements and researches took place and what we have today is a device which is connected to a virtual world of network connect people immediately, not with people who are nearby but with those people who are far away in different country using a telephone which was first introduced in year 1876 but even before that cables and fibers were which were the spinal cord of it. So the elementary example of networking is telephone.

Growth is taking place with an unbeatable pace, to help growth a good and reliable network is necessary. A good and reliable network means something which a user can trust. There are several different types of network connections. It all depends on the kind of work that a user is willing to do and which suits him the best accordingly.

1. Point to point
2. Bus
3. Hybrid
4. Star
5. Ring
6. Mesh
7. Tree

Above mentioned are the types of different topologies, they all have a different kind of architectures which makes all of them different from each other. They all serve the same task but in a different manner. Advancement has gone this far that today we can use all the above mentioned topologies wirelessly which at a point of time no one had thought of.

We all know that whenever advancement takes place, its users and consumer base increases. As soon as the consumer base increases it is pretty much necessary to check that whatever is traveling through network whether wired or wireless the data has to be kept secured. There are cases where companies



## LAN, WAN and Home Networking

Residences typically employ one LAN and connect to the Internet WAN via an Internet Service Provider (ISP) using a broadband modem. The ISP provides a WAN IP address to the modem, and all of the computers on the home network use LAN (so-called *private*) IP addresses. All computers on the home LAN can communicate directly with each other but must go through a central network gateway, typically a broadband router, to reach the ISP.

### Other Types of Area Networks

- **Wireless Local Area Network** - A LAN based on Wi-Fi wireless network technology
- **Metropolitan Area Network** - A network spanning a physical area larger than a LAN but smaller than a WAN, such as a city. A MAN is typically owned and operated by a single entity such as a government body or large corporation.
- **Campus Area Network** - A network spanning multiple LANs but smaller than a MAN, such as on a university or local business campus.
- **Storage Area Network** - Connects servers to data storage devices through a technology like Fiber Channel.
- **System Area Network** (also known as Cluster Area Network) - Links high-performance computers with high-speed connections in a cluster configuration.

### Types of Wireless Local Networks

A WLAN can be built using any of several different wireless network protocols, most commonly either Wi-Fi or Bluetooth. Wireless LANs can contain many different kinds of devices including

- mobile phones
- laptop and tablet computers
- Internet audio systems
- game consoles
- Internet-enabled home appliances

A WLAN can contain as few as two devices up to one hundred and more (although wireless networks become increasingly difficult to manage as the number of devices increases).

### Types of WLAN Hardware and Connections

WLAN connections work via radio transmitters and receivers built into client devices. Wireless networks don't require cables, but several special purpose devices (also possessing their own radios and receiver antennas) are usually used to build them. Wi-Fi local networks, for example, can be constructed in either of two modes:

- ad hoc
- infrastructure

Wi-Fi ad hoc mode WLANs consist of peer-to-peer direct connections between clients with no intermediate hardware components involved. Ad hoc local networks can be useful to make temporary connections in some situations, but they don't scale to support more than a few devices and also can pose security risks.

A Wi-Fi infrastructure mode WLAN, on the other hand, utilizes a central device called a wireless access point ("AP") that all clients connect to. In home networks, wireless broadband routers perform the functions of an AP plus enable the WLAN for home Internet access. Multiple APs can be interfaced to either and connect multiple WLANs into a larger one.

Some wireless LANs exist to extend an existing wired network. This type of WLAN is built by attaching an access point to the edge of the wired network and set up the AP to work in bridging mode.

failed to overcome security threats and as a result all the data was hacked. Companies have to be smart and aware enough to assure its users about data safety.

### **SSL {Secure Sockets Layer}**

To meet with security requirements all the website today uses a SSL certificate, which is a kind of digital certificates embedded in the code of a website used to secure content of website. Everyone today makes an online transaction to buy stuff or to pay fees or whatever the reason would be, only due to these certificates we are able to make these transactions with a peace of mind.

How SSL works?

Whenever any internet browser attempts to connect to a website secured with SSL to its hosting server the browser requests that the web server identify itself which makes the host server safe enough to share the data the server then sends the browser a copy of its SSL Certificate. Then a cross check between browser and host server takes place that the details is being shared with a verified person and there is no sniffing or phishing in between network tunnel. The browser checks whether it trusts the SSL Certificate. Once confirmed host allows to share data with the peer which is the user trying to gain the access or asking for a permission to go through to continue . The server sends back a digitally signed acknowledgment to start an SSL encrypted session. Encrypted data is shared between the browser and the server and https appears.

We often say the there is no internet connection and that is why we are not able to connect to world. Have you ever thought that how much of work it takes to get internet connectivity to your office or to your home?

There are 7 possible ways in which internet companies offer connectivity to us: Following are listed down below.

- 1- LAN - Local Area Network
- 2- WAN - Wide Area Network
- 3- WLAN - Wireless Local Area Network
- 4- MAN - Metropolitan Area Network
- 5- SAN - Storage Area Network, System Area Network, Server Area Network, or sometimes Small Area Network
- 6- CAN - Campus Area Network, Controller Area Network, or sometimes Cluster Area Network
- 7- PAN - Personal Area Network

### **LAN (Local Area Network)**

A LAN connects network devices over a relatively short distance. A networked office building, school, or home usually contains a single LAN, though sometimes one building will contain a few small LANs (perhaps one per room), and occasionally a LAN will span a group of nearby buildings. In TCP/IP networking, a LAN is often but not always implemented as a single IP subnet. In addition to operating in a limited space, LANs are also typically owned, controlled, and managed by a single person or organization. They also tend to use certain connectivity technologies, primarily Ethernet and Token Ring.

### **WAN (Wide Area Network)**

As the term implies, a WAN spans a large physical distance. The Internet is the largest WAN, spanning the Earth. A WAN is a geographically-dispersed collection of LANs. A network device called a router connects LANs to a WAN.

In IP networking, the router maintains both a LAN address and a WAN address.

A WAN differs from a LAN in several important ways. Most WANs (like the Internet) are not owned by any one organization but rather exist under collective or distributed ownership and management. WANs tend to use technology like ATM, Frame Relay and X.25 for connectivity over the longer distances

Clients communicate with the access point through the wireless link and can reach the Ethernet network through the AP's bridge connection.

### **WLAN vs. WWAN**

Cell networks support mobile phones connecting over long distances - a type of so-called **wireless wide area networks (WWAN)**. What distinguish a local network from a wide network are the usage models they support along with some rough limits on physical distance and area:

- local area networks cover individual buildings or public hotspots - spanning hundreds or thousands of square feet (metres).
- wide area networks cover cities or geographic regions - spanning miles or kilometres.

### **Wireless LAN Security**

Network security remains an important issue for WLANs. Wireless clients usually must have their identity verified (a process called *authentication*) when joining a wireless LAN. Technologies like WPA raise the level of security on wireless networks to rival that of traditional wired networks.

### **Using Internet VPN for Wide Area Networking**

Being the worlds largest WAN, the Internet can be used for long distance communications just like X.25, Frame Relay or other private networks.

Some companies set up their own private virtual private network (VPN) servers and use VPN connections over the Internet for protected communications between sites. Although VPNs provide reasonable levels of security for business uses, a public Internet connection does not always provide the predictable levels of performance that a dedicated WAN link can.

### **Using Leased Lines for Wide Area Networking**

Many businesses started using leased line WANs in the mid 1990s as the Web and Internet exploded in popularity. T1 and T3 lines are often used to support MPLS or Internet VPN communications.

Metro Ethernet-Long-distance, point-to-point Ethernet links can also be used to build dedicated wide area networks. While much more expensive than Internet VPNs or MPLS solutions, private Ethernet WANs offer very high performance, with links typically rated at 1 Gbps compared to the 45 Mbps of a traditional T1.

### **Issues with Wide Area Networks**

1. WAN networks are much more expensive than home or corporate intranets.
2. WANs that cross international and other territorial boundaries fall under different legal jurisdictions. Disputes can arise between governments over ownership rights and network usage restrictions.
3. Global WANs require the use of undersea network cables to communicate across continent. Undersea cables are subject to sabotage and also unintentional breaks from ships and weather conditions. Compared to underground land lines, undersea cables tend to take much longer and cost much more money to repair.
4. Government related issues regarding to permissions on newly developed products are not at all easy to get. As the tech is newly developed and govt officials have no idea what tech are they talking upon and as seen from the govt's perspective it is true that they cannot allow any product to be launched to consumer industry as it is possible that it might harm consumers from daily use as major network developments today that are taking place are wireless which means that they are full of radio active waves. So in order to take care govt takes all possible necessary steps and once they are satisfied then only they grant licences for the products.

## CONCLUSION

Every country has different safety concerns and parameters according to which they work. So all the companies have to play safe that whatever product they are working on can be launched globally without many modifications as if there would be modifications engineers. They will have to do more R&D which will further lead to more investment.

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# DIGITAL ART

## Introduction

- Art refers to branches of creative activity which require creative skills and imagination resulting in painting, drawing, sculpture, etc.
- The new technology of Digital Art has turned out to become a strong tool for the artists and art lovers.
- *Any action resulting in a creative output which can either be a painting, sculpture, drawing, illusion, music or more, with the use of digital technology like computer, graphic tablet, a cellphone is Digital Art.*



## Advantages

- Digital Art provides a single machine for every artwork whether it is canvas, marble, colors, every mode of blending the colors, everything neatly placed on the desk.
- It provides flexibility to make mistakes.
- Our work doesn't get easily damaged.



## Creative Uses

- The digital magic videos of ZachKing makes the full utilization of technology.
- The movies like MadMax Fury Road and The Martian, takes the complete advantage of Digital Art's another subpart that is VFX.
- The new and most advanced games like The Witcher 3, DIRT, make good use of Graphics.



## Need to be further worked

- There are many possibilities to cure a disease with music therapy.
- Working on 7D projects can open gate to several new ideas.
- Education can be taken to a new level but is not properly used.

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# DIGITAL ART

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## **Abstract:**

*The word 'Digital' is derived from the Latin word digits which mean the data that can be represented as a series of binary numbers i.e. 0 and 1. Art refers to branches of creative activity which require creative skills and imagination resulting in painting, drawing, sculpture, etc. By joining these two words together we get, "Any action resulting in a creative output which can either be a painting, sculpture, drawing, illusion, music or more, with the use of digital technology like computer, graphic tablet, a cell phone or so." The history of Digital Art goes back to the 1950s but as that time was not the tech-era; people did not trust technology. The last ten years have seen a tremendous achievement in this field. We can see the changes in the movies, the visual effects are heart stopper, and the games can make us believe we are actually in that atmosphere. The increasing technology has increased desires, if we have a cellphone, we think getting a tablet can increase efficiency, or using Photoshop can. The chain goes on. With the great success of digital art, people have started counting it as non-art. The reason they state that a real artist needs to learn mastering pencils, brushes, color mixing and the most important that they cannot undo their mistakes. But is it really true? In creating a digital painting, one need to master blending of colors, every brush has its own specific purpose. The paper investigates the validity of Digital Art as Art.*

**Keywords:** *Art, Digital Art, Digital Painting, Sculpture, Laser Art.*

## **Introduction**

The time changes the needs of human. This modern era is full of workloads and tension and people are prone to depression. If the people are so prone to depression, due to their hectic and stressful life, they will definitely need something to turn their depression mode off and provide some inner peace. Now we all know how we can stay happy and what are the ways to stay cool in any sort of situation, but we do not follow them. This leads us to a depressed state. This is where digital art takes initiative. Let us understand this how it can help us.

Consider if a man is having a lot of problems in his life, he is facing certain issues at the place of work, having some problems in the family, he is having negative aspect towards life; he surely will be on the verge of depression or will be suffering so. Assume that now he goes to see a doctor, rather a psychiatrist. He will prescribe him some medicines and will tell him to take a break from his hectic life. He may tell him to go to some hilly areas like Manali or Mount Abu or someplace where he can divert his mind. Do you think it is possible for him to take a break from the family and office where he is working? Can he afford this trip? Well the answer to this will be 'no' in most of the cases. What to do now? What if, we can bring the atmosphere of these places in a room? Looks impossible?

But it's not. We now have technologies like 3D, 5D, 7D. With certain improvements, we can create that atmosphere in a room. Let us create that environment just now, picture yourself sitting beneath a cheery blossom tree, at the top of a hill, you can see mountains all over, the rising sun, chirping of birds, we can feel the breeze, and cherry leaves are flowing all over the air, with some soft classical instrumental music being played in the background. Isn't it fantastic? Will this not give us the actual feeling of being at the place? Yes it will. A concept similar to this is used by Robert Downey Jr. in the recent movie Captain America Civil War. This tends to be a wonderful achievement. This is completely a concept of Digital Art. As all of the atmosphere is built by the computer using certain software using the Digital Art.

You all must have heard of music therapy. The music here is again an art. As it is stored in our computer, mobile, laptops, tablet, pen drive, the only way these devices can share information is by the use of binary language. So they all are stored in binary form or digitally. Hence it is not wrong to mention that

the music we listen is completely a combination of Technology and Art.

Not much long ago, a new category in the field of art appeared, gaining a lot of attention – Digital Art. The new technology has turned out to become a strong tool for the artists and art lovers. Lots of people are choosing it as their primary occupation as well as to make a difference in the society. Ever thought of why is it gaining this much attention? The traditional artists started to look at Digital Art as if it is some sort of unfair extension to Art. This was because the computer provides a single pen instead of a bunch of pencils with different shades, different softness, charcoal, ink, oil colors, acrylic colors. A single machine for every artwork whether it is canvas, marble, colors, every mode of blending the colors, everything neatly placed on the desk. It provides to artist flexibility to make mistakes, which means he/she can undo their actions.

This is really great benefit for the artists as now on they can create something of their own without worrying about it getting distorted due to something new they were trying. This way creating an artwork got quite easy as otherwise we would have to manage our brushes, paints, and stuffs. We would have to worry about our work getting discomposed or damaged due to lots of reasons. The dust particles will get stuck to a painting if it is wet and will hamper the actual output of the artwork. A sculpture can get broken or if it get hammered a bit hard, all the work goes in vein and the artist has to redo all the work. There are quite a difficulties an artist has to face. But in digital art, the only thing the one has to worry about is the hard drive getting damaged. But now, data can be recovered even from broken hard drive. This way digitalization of art has really helped the artists.

In the past decade, the society has revolutionized digitally at a tremendous rate. Every 10-15 days, something gets upgraded or introduced or innovated. Calling this era a digital era is not wrong. Artworks of artists are appreciated all around the world; whether it's a sketch or a painting, a sculpture, music or simply some beats or anything.

In the beginning of 21<sup>st</sup> century, we have hardly seen any smartphones or i-series processors. But now, we all have Smartphone in our hand. The rates of increase in the sale of these products have astonished the society. Looking at these advancements, some software companies introduced software's which can give us a boost in this field. Software companies like Adobe, Autodesk have covered the market with software we can use to animate, design, create digital painting, designing a room to a house to an entire city.

We can reach to any height only if we are creative. You must have seen the videos of Zach King. These videos are trending these days. Looking at the videos we feel like it is some sort of magic, but it actually a combination of 2 or 3 digitally edited videos. This is what we call Digital Magic. This man only uses the most creative ways to present something which turns utterly fabulous.

We can also feel the difference of the use of Digital Art in the field of entertainment that is in games and movies. The movies like MadMax Fury Road and The Martian, takes the complete advantage of Digital Art's another subpart that is VFX. The work in these movies must really be appreciated as they use every possible way to make the scenes look realistic and which are loved by the audience. The new and most advanced games like The Witcher 3, DIRT, makes us feel like we are in another world and everything that we are doing in the game, is happening to us for real.

These are some platforms of digital art where people are showing their talent.

- Digital Painting

Digital Painting is a medium to create an art or a painting digitally, by the use of a computer. It uses traditional painting mediums like oil paints, acrylic paints, water colors, ink, charcoal etc. and uses virtual canvas and virtual painting supplies. Digital Painting is a kind of Digital Art, but it not really a Computer generated art. Computer does not automatically generate an image from the models created by the artist. Here, artist has to use his own painting techniques to create an image directly on the computer.

- **Laser Art**  
Laser Art consists lasers that are used to engrave any object. This technique does not include use of inks, colors, canvas. It is really new concept which not everyone knows about. Today Laser Art is used for interior designing, lamp designing, shoe designing, keychain designing, headphone designing and much more. This gives a product 3D look and it is really being adapted by the society for innovation.
- **Digital Sculpting**  
Digital Sculpting is creating 3 dimensional model of anything, the way we create traditionally. Instead it uses a software which provides the base like clay, stone, wood, glass, metal, bone etc. and materials used to craft these bases like brushes, hammer, chisel etc. These models can then be given desired textures or can be colored with the use of the software's or we can paint them manually if we like so. These are mostly presented in a light which resembles a realistic environment. The sculpture can be then printed by a 3D printed which will automatically carve the base material to look like what we actually made in the computer.
- **Robot Painting**  
A robot when creates an artwork with the use of artist grade paints and actual brush strokes, is robot painting. The first robot painting was created in the mid-1970s by a robot named AARON, an artificial artist created by Prof. Harold Cohen.
- **Algorithm Art**  
It is known as computer-generated art because it is generated by an autonomous system and is influenced by systems theory. As the name suggests, the pattern is generated using an algorithm. Even the simplest algorithms sometimes require a lot of calculation if we want to execute it practically. So they are executed on a computer or a bunch of computers. Here, computer code, functions, expressions may be included for designing and possible execution of the artwork which ultimately determines the form the artwork is going to take. The input mostly is mathematical, computational or generative in nature.
- **Internet Art**  
Net Art is a kind of digital art which is distributed by the internet. Net art can be used to send any message with the use of human interactions. It is interactive in nature and is completely different from the traditional way of showcasing artwork by galleries and museums. It is a way by which even a small artist can showcase their work to a large number of audiences. They need not to give some ransom amount to showcase their work like it happens in galleries all around the globe. Net Artists are the ones who do this kind of stuffs.
- **Glitch Art**  
Glitch is an unexpected result of malfunction in software's, images, videos, audios etc. Glitch art is a part of art where the artist corrupts the digital data or physically manipulate the devices, using digital errors for getting beautiful results.  
In simple words, the artist uses the malfunction of any digital artifacts to create some beautiful result. It can be an image, an audio, a video.  
There are three methods to create a glitch art, these are, datamoshing, circuit bending and 3D model glitching. These can be made on certain platforms like Avidemux, WordPad, and Audacity etc.
- **Anime Art**  
Anime is a computer animation. Anime signifies colorful graphics, fantastic themes or vibrant characters. It was introduced in Japan in 1971 and its production continued. It consists an idea of story-telling with combination of graphic art and forms of imaginative techniques.

As we have seen the various areas where digital art can perform, and have been performing, it is a tremendous platform to work on. This era, the digital era, needs it the most. People may not think it as something important but if we have a look, it is a major part of our day to day life. From the



newspaper in the morning to using phone at night, everything requires this art form. We read newspapers, where are they designed? On computer, on coral draw or any other software. A magazine, any flex pamphlet all are designed over a computer. We want to advertise, it again happen with the use of animation and visual effects, we want to surf internet, the webpages designed are again example of digital art. This way or the other, we are surrounded by digitalized art.

We already saw how important digital art is in our lives. Art is what you acquire from your birth. Whether you paint on canvas or use your vocals, it is art. If you paint not on traditional but on digital canvas, what difference does it make. It also requires all those tools, all those skills. Hence, I in my opinion will state that Digital art is really a form of Art.

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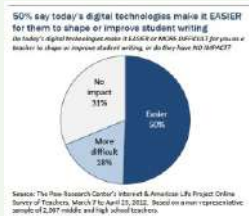
# SOCIAL MEDIA

## *Blooming Effects of Internet*

### Introduction

- India's base of 460 million user is currently second largest and fastest growing.
- Dull internet infrastructure has kept India internet penetration at 30%.
- India ranked 49 out of 57 countries on internet ecosystem.
- We have only 7 % of secure servers.
- The perforation of pc's is only 47 per 1000 users.

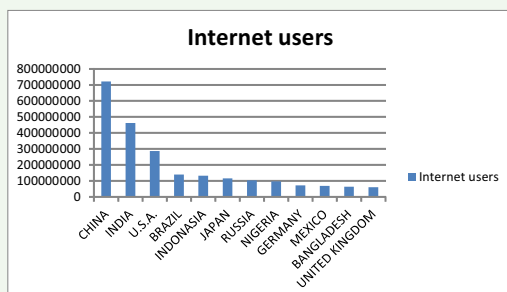
### Obstacles



- India has one of the highest median cost of broadband access.
- Digital literacy is almost no-existent among more than 90% of India population.
- Narrow range of applications and services.
- India is ranked 50th among 57 countries on the number of procedures required to start a new business.

### Methods

- Extend infrastructure for low cost, high speed connectivity to semi-urban and rural parts of India.
- Reduce the cost of Internet access and usage even further.
- Enable large-scale digital literacy to promote user engagement.



### Conclusion

- The internet nowadays is one of the most important things in our lives.
- Internet help us to communicate day to day and to research.

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# SOCIAL MEDIA: BLOOMING EFFECT OF INTERNET

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## **ABSTRACT:**

*The Internet today connects more than two billion people worldwide. The Internet already has immense impact on the global economy, contributing an estimated \$1.7 trillion, or just under 3 percent, of global GDP in 2010. Yet half the numbers of Internet users' lives outside the advanced economies, often in countries that are quickly developing, have significant economic potential and are socially and culturally diverse. India has about 120 million people online today and offers a striking example of the Internet's growth potential. India is adopting the Internet at a much more rapid pace than advanced economies and even many developing economies, yet 90 percent of its population is currently not connected. This report assesses the impact of the Internet on India's economy, estimating its impact on GDP. Looking beyond that, we measure the Internet's broader impact in terms of consumer surplus and the development of Internet ecosystems. We also look at the ways in which various participants have benefitted from the Internet already. We measure India's environment for e-commerce and entrepreneurship, and we analyze in detail the impact of the Internet on its small and medium-sized enterprises (SMEs). Finally, we assess the potential for the future impact of the Internet and what it would take for India to bring this potential into being. As a basis for comparison, we use a set of 57 countries, both developed and developing, that include the G-20, many middle-income developing nations, and some populous but less-developed nations; these collectively constitute 91 percent of world GDP. We focus our comparisons on five: Germany, South Korea, Sweden, the United Kingdom, and the United States.*

**KEYWORDS:** *Social Media, Internet Connectivity, Impact of Internet.*

## **INTRODUCTION**

India's base of about 120 million Internet users is currently the third largest globally, and the pattern of online behavior is rapidly converging with that of users in more developed countries. India's large economy, with its young and increasingly urbanizing consumer base, offers strong growth potential for Internet usage. Weak infrastructure has kept India's Internet penetration low; at 10 percent, it is much lower than the average of 40 percent across aspiring countries. Even so, with about 120 million people online in 2011, India is the third largest Internet user base in the world. Internet users in India spend 20 to 25 hours online per month, about the same as their counterparts in Latin America, but only a quarter of the amount spent by those in Asia Pacific countries such as China and Malaysia.

However, the time spent on the Internet per user in India rose 24 percent from 2010 to 2012; more sophisticated categories of Internet use, such as social networking, online research, online transactions and entertainment, grew more rapidly than reading and browsing. The share of Indian digital consumers who use online media for search, awareness, and research to purchase products is already high across multiple categories: in apparel (26 percent), travel (51 percent), books (36 percent), and financial services (30 percent), the proportions are comparable with those in Germany, Japan and the United States.

India is on the verge of an Internet boom with a projected user base of 330 million to 370 million by 2015, which will be the second largest in the world, and the largest in terms of incremental growth.

India's current Internet user base of about 120 million is likely to nearly treble by 2015, and will thereby account for approximately 12 percent of the global total (Exhibit E1). The projected growth in India's Internet users, an additional 230 million or so between 2011 and 2015 is likely to be the highest incremental growth in the world. In recent years, India's rate of growth of Internet users has been faster than that of many aspiring countries—for example, Malaysia's Internet user base grew 1.8 times from 2005 to 2011, and South Africa's grew 1.9 times, while India's grew more than 5 times.

India's Internet revolution is being shaped by telecom players' strategies to reduce cost of access. Smartphone costs are falling rapidly as players achieve scale economies, while the proliferation of 3G/4G services in India is likely to reduce connectivity costs and overcome the challenge of limited fixed line connections. As a result, nearly 75 percent of new users and more than half of India's base of Internet users in 2015 is likely to be mobile-only subscribers who will use Internet enabled devices. By contrast, mobile-only users are likely to constitute a mere 10 to 15 percent of the market in India's regional counterparts.

India has the potential to double its economic contribution from the Internet in the next three years, from 1.6 percent of GDP at present to 2.8 to 3.3 percent by 2015. Despite the large current base of users, the Internet currently contributes a modest 1.6 percent to India's GDP, in line with most aspiring countries. This could grow to 2.8 to 3.3 percent by 2015 if India achieves its potential for growth in the number of Internet users and Internet technology-related consumption and investment over this period, increasing the Internet's contribution to GDP from \$30 billion today to nearly \$100 billion in 2015. This would make the Internet-related economy larger than the education sector and as large as the health care sector, in terms of share of GDP at present. Currently, India's information and communication technology (ICT) exports are the most significant component of the Internet's impact on GDP. But private consumption, private investment and public investment have greater potential to grow in future.

The impact of the Internet in India is constrained by current gaps and obstacles in the Internet ecosystem. While India scores well on the availability of human and financial capital, it rates poorly on Internet infrastructure, Internet engagement, the e-commerce platform, the ease of Internet entrepreneurship, and the impact of e-governance. On most indicators of the strength of the Internet ecosystem, India ranks in the bottom quartile of our comparison set of 57 countries.

Although the Internet ecosystem is becoming more vibrant, the benefits have been relatively concentrated. India's Internet start-ups are scaling up through creative adaptations to overcome infrastructural and systemic bottlenecks. Yet, while large enterprises have gained from their early adoption of the Internet, there is scope among individual consumers, SMEs and the government sector to significantly increase engagement. Today, India's measurable consumer surplus from the Internet is estimated at \$9 per user per month, at the low end of the range for aspiring countries (\$9 to \$26) and well below the range for developed countries (\$18 to \$28). Even by 2015, with overall Internet penetration likely to reach 28 percent, rural penetration is likely to be just 9 percent.

India can achieve broad-based Internet impact by aiming for the digital inclusion of nearly 40 percent of its population, to reach a user base of 500 million by 2015, rather than the likely target of 330 million to 370 million. Most of the additional 150 million to 160 million users would be individuals and small businesses in semi-urban and rural parts of the country. Extending Internet access to these segments of the population, and promoting the usage of many more online services, would enable India to derive much more of the intended benefits from government programs of inclusive growth in employment, education, health care, nutrition, and financial services.

Concerted actions by policy makers and businesses in five areas can help India achieve an inclusive Internet transformation: reduce the cost of Internet access across devices, content and applications; increase access to low-cost, high-speed connectivity in rural and semi-urban India beyond the top cities; promote widespread digital literacy through the introduction of devices and content tailored to the local context; devise Internet applications in new areas such as agriculture, health care, education, energy, utilities, and public information; and create a more favorable business environment for Internet entrepreneurs to support rapid innovation.

## OBSTACLES

- 1) **Limited availability of Internet infrastructure:** -India is ranked 49 out of 57 countries on Internet infrastructure and environment. For example, India has only approximately 6 percent of the number of secure Internet servers per capita that Brazil or South Africa has. Average bandwidth per capita in India is significantly lower than in many other aspiring countries. The penetration of PCs is only 47 per 1,000 people, which is much lower than in Argentina, Mexico, the Philippines, or Vietnam. Internet penetration among India's large rural population is just one-twelfth that of the urban population. Low availability of basic infrastructure, such as reliable electricity supply, is a key bottleneck in rural areas.
- 2) **High cost of access and usage:** - At \$61 per Mbps (on a PPP basis), India has one of the highest median costs of broadband access among comparable aspiring countries — more than four times that of China, Brazil and Argentina, and 20 to 30 percent higher than that of Vietnam and Malaysia.
- 3) **Lack of awareness and low digital literacy:** - Only 35 percent of businesses in India offered online services such as Web presence, compared with an average of 56 percent in aspiring countries. In an online survey of India's SMEs in the organized sector, they cited the lack of education on using the Internet as among the top three reasons that prevent consumers from using the Internet.
- 4) **Narrow range of applications and services:** -. Internet applications are yet to scale up in a wide range of areas that impact society, such as agriculture, education, health care, and citizen services. Access to online government services across the country is low, with a large quantity of government data, such as land or health records, yet to be digitized and large flagship Internet infrastructure projects such as the National Optical Fiber Network yet to become fully operational. India is ranked in the bottom quartile on government e-participation index, which measures the breadth and usage of online services offered by the government.
- 5) **An unfavorable business environment:** - India is ranked 48 out of 57 countries on ease of Internet entrepreneurship. Indian entrepreneurs face particular challenges in terms of the ease of starting a new business — India is ranked 50th among 57 countries on the number of procedures required to start a new business.

## METHODS

- 1) **Extend infrastructure for low cost, high speed connectivity to semi-urban and rural parts of India:** -. In order to increase the penetration to 40 percent, it is essential to extend the Internet infrastructure beyond the top tier cities. Mobile connectivity will play a large part in achieving this. As the 3G network expands and 4G is rolled out, it is essential to include semi-urban and rural areas. Accelerating existing government programs (such as the National Optical Fiber Network), promoting public-private collaboration, and a supportive telecom policy could potentially improve the pace of the roll out. For example, such initiatives in Peru have provided “last mile” connectivity to rural areas of the country.
- 2) **Reduce the cost of Internet access and usage even further:** -Providing an affordable means to access and use the Internet is a critical enabler to increase Internet penetration. As India looks to connect more of its rural population, it is essential to provide low cost access devices, affordable Internet connections and applications/services through rationalization of tax structures, direct subsidies, conditional cash transfers, or regulated broadband tariffs. Device manufacturers can also play their part in making the Internet more affordable.
- 3) **Enable large-scale digital literacy to promote user engagement:** -. Lack of education about using the Internet and near absence of local language support in devices, applications and services is holding back the increase in usage. This shortfall becomes more acute as less educated users from rural areas gain access to the Internet. Hungary is an example of affordability being an insufficient stimulus to usage: though over 90 percent of the population can afford broadband Internet, only about half actually use it on account of the limited availability of local digital content, and low digital literacy. Sri Lanka's Ministry of Education is

promoting digital literacy through the establishment of self-sustaining computer learning centers that provide training and Internet access after school hours.

- 4) **Introduce Internet-based applications in all parts of the economy, including non-traditional areas such as agriculture, energy, education, utilities and health care:** - As Internet penetration increases and more users have access to high-speed connections, it is essential to develop products and services that address a much wider range of needs. An example is Ghana's CocoaLink project, an outreach program for farmers to exchange expertise in the community. The availability of public sector information could open immense opportunities to create innovative and useful services over the Internet, with strong potential for impact: providing farmers with real time updates on prices, increasing efficiency of the power grids, and enabling transparent online procurement systems.
- 5) **Create a favorable environment for Internet businesses to both start and scale up. India lags behind other countries in this regard**

## CONCLUSION

In conclusion the internet nowadays is one of the most important things in our lives. It helps us day by day to communicate, to do research and find out anything we need or promoting a business. In the same time separates us from real world because we get used to it and forget to do the essential things of life.

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# Digital India

## INTRODUCTION

- In an order to create participative, transparent and responsive government, Prime Minister Narendra Modi launched the much ambitious 'Digital India' programme on July 1, the dream that pushes, for digitalization and e-governance in India, is a long and winding road. But it is one which, if handled properly, could bring about real and tangible changes in the Indian economic structure.

## ADVANTAGES

- It helps in employing 17 million jobs directly and 85 million jobs indirectly.
- Some sectors like healthcare, education, banking and more sectors will be able to reach out to rural areas.
- Digital lockers will help the people of India to store their important documents like PAN card, Passport, Degrees and certificates digitally.

## PILLARS OF DIGITAL INDIA

- Broadband Highways
- Universal access of mobile connectivity
- Public internet access programme
- e-Kranti
- Information for all
- e-Governance
- Jobs in IT sector
- Early Harvest programme

## KEY SECTORS

- Financial sector
- Education sector
- Health sector
- Agriculture sector
- Energy
- Government services



# DIGITAL INDIA

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## **Abstract:**

*Digital India, the dream that pushes, for digitalization and e-governance in India, is a long and winding road. But it is one which, if handled properly, could bring about real and tangible changes in the Indian economic structure. We have to implement these technologies in key areas such as financial services, education, health care etc. We must focus the digital revolution towards welfare improvement not just on GDP growth. The country will feel the impact of Digital India only beginning in 2018 once private players start leveraging broadband infrastructure to expand products and services. Our Prime Minister Narendra Modi's Digital India initiative is a reward push to address the delays plaguing flagship programs that focus on universal broadband access and mobile connectivity. Direct spending via public-sector organizations like BSNL, Railtel and PGCIL will be limited, but significant indirect demand will result from many more of the 68% of India's population that lives in rural areas, will eventually come online. The technology expenditure will reach 2.59 trillion in 2017 from 2.08 trillion in 2015. A third of that spending will be on hardware, which remains the biggest area of expense for Indian companies. However, communication equipment spending will grow more slowly than the rest as the market continues to mature and prices drop.*

**Keywords:** *Digital India, e-governance, India, Technology*

## **INTRODUCTION**

1986 was the year in which internet was started in India, from that year till now our country is growing at a very high growth rate. Earlier there is no transparency in government work even we were working on very traditional system. Indian GDP is increasing at 7-8% average rate, but traditional method of governance was not giving the right signals to the citizens so An E-governance plan was launched in 2006 by the government of India trying to connect government services to the public via telecom services. This did not meet expectations, and was soon let go of the caring the idea PM Narendra Modi on 1<sup>st</sup> July 2014 starts a new "Digital India" Programme in order to create Participate, Transport and response government.

With Digital India project, the government is ready for the big programmer by connecting every service and every individual to the e-power. This facility will aim to lessen the usage of physical documents and enable sharing of e-documents across every organization. Number of mobile apps and portals will be developed by the Indian government which gives the freedom to access the data while on the move. High speed network will aid adequate infrastructure for online education platforms through smart and virtual classrooms. This move by our PM will definitely facilitate more creative and service-oriented business models that create employment opportunities for the youth of India.

This program strives to give equal benefit to the user and service provider. The consumers will be benefitted by way of saving time, money, physical and cognitive energy spent in lengthy government processes. For an e.g. digital ticketing will lead to reduction in queue at ticket counter with online links for booking, online tax-return filing, online bill payments, online purchases etc. The aim of Digital India is to give a Unique ID and e-pramaan based on authentic and standard based interoperable and integrated government applications and data basis. Digital India is a programme to transform India into a digitally empowered society and knowledge economy. Digital India is an umbrella programme which covers many departments. This initiative will ensure that the government services and information are available anywhere, anytime on any device in all over the country. Our government is ready for the big programme by connecting every service with e-power.



## VISION

The vision of Digital India is centered on three main key areas:

- I. **Digital infrastructure as a utility to every citizen:** This vision provides high speed internet as a core utility public services like the land records, certificates and many more will be made available online or public cloud. It provides a safe and secure cyber space in the country.
- II. **Governance and services on demand:** In this vision, every government services or information is available in real time from online and mobile platforms. It makes financial transactions electronics and cashless and provides single window access to every individual in all over the country.
- III. **Digital empowerment of citizens:** All digital resources will be available universally in Indian languages. All documents and certificates to be available on the cloud. All the citizens of the country will be able to enjoy the freedom to use resources in their friendly language.

## PILLARS

The government aims to target 8 'Pillars of Digital India' which are as follows:-

- 3.1 **Broadband Highways**
  - Broadband in the rural areas of the country
  - Broadband in the urban areas of the country
  - Mandate communication infrastructure in new urban development.
- 3.2 **Universal access of mobile connectivity**
  - Network services will be increased.
  - To connect the areas which are still not connected by using latest technologies.
  - To provide global phone connection.
- 3.3 **Public internet access programme**
  - It's a mission to connect the whole country with the internet.
  - CSCs- made viable, multifunctional end-points for service delivery.
  - Post offices to be converted into multi-service centers.
- 3.4 **e-Governance**
  - To reform government through technology.
  - Online applications and tracking service between departments.
  - To convert every manual work into fully automated system inside government.
  - Quickly respond, analyze and solve persistent problems.
  - All databases and information to be done electronically, not manually.
- 3.5 **e-Kranti**
  - E-education will be introduced for Education.
  - E-healthcare will be introduced for health.
  - Technology for Farmers.
  - Technology for Security.
  - Technology for Justice.
  - Technology for financial inclusion
- 3.6 **Information for all**
  - All the citizens can enjoy the open and easy access of information.
  - There will be a 2 way communication between citizen and government.
  - Internet messaging to the citizens on special occasions.
- 3.7 **Jobs in IT sector**
  - Training people in small towns and villages will be provided to get selected in the IT sector jobs.
  - To give training and teaching skills to the youths for employment opportunities in the IT sector.
- 3.8 **Early Harvest programme**
  - Government greetings to be e-greetings in near future.
  - Educational books to e-books

- Biometric attendance
- WI-FI in all universities all over the country
- Public Wi-Fi hotspots.

### KEY SECTORS TO FOCUS ON

- **FINANCIAL SECTOR:** - Though banks have taken steps towards digitalizing their services in the past years, still there is a large portion of population which does not have their account in the banks; only 36% of Indians have their bank accounts. With the coming technologies it is possible to bring wider access to banking and smart banking services and Up to 300 million Indians could attain bank accounts and avail to banking services.
- **EDUCATION SECTOR:** - Taking a look of our current level of education India runs the risk of having a severe high-skill workforce shortage by 2025. Digital India has the ability to improve the current condition of the education system. Proper implementation of the Digital India techniques could raise national productivity and have an impact of almost \$90 billion on the economy.
- **HEALTH SECTOR:** - India is equipped only with around half of the doctors, nurses and medical infrastructures. Even the resources which are available are not fit to give optimum healthcare. Digitalization could improve our current healthcare via implementations such as remote health services, digital aids etc.
- **AGRICULTURE SECTOR:** - Farming can be improved by genetically modified crops, GIS based geographical and meteorological data to guide farming as well as improvements in storage and distribution.
- **ENERGY:** - 300 million population of India lacks access of electricity thus severely hampering production potential and output. Advanced metering infrastructures could help curb faulty readings and over and undercharges.
- **GOVERNMENT SERVICES:** - Indian citizens have struggled a long to get responsive and transparent governmental services. Initiatives like the e-governance plan better tracking of government funding can be established as well as decrease the bureaucratic hurdler required to service a request. Digitalization will play an important role in improving the Government services.

### ADVANTAGES OF DIGITALIZATION

It will give many opportunities to use latest technology by providing access to education, health, financial services etc. It will help in improving the social and economic condition of people living in rural as well as urban areas of the country.

- ❖ Digital India Plan improves GDP growth to 1 trillion by 2025. It also gives employment, GDP growth, increased labor productivity and entrepreneurship opportunities.
- ❖ It helps in employing 17 million jobs directly and 85 million jobs indirectly. Almost 100 million jobs will be made by the plan in next 5 years.
- ❖ Some sectors like healthcare, education, banking and more sectors will be able to reach out to rural areas. Obstructions like poverty, awareness, illiteracy will be removed from the country.
- ❖ India is a big market for internet and mobile connectivity. India has 3rd largest market of internet users and 2<sup>nd</sup> place in wireless subscribers in the world.
- ❖ Digital India projects will give real time education, Smart classes and virtual classroom for the development of the students as well as to the places where there is lack of teacher's. Education to farmers, fisherman will also be provided with the help of digital India.
- ❖ E-Health will promote innovation and increase the reach of healthcare services. Online medical access with many other features will help in fighting from poor doctor ratio.
- ❖ Agriculture sector contributes about 16% in GDP and almost 51% in employment. It help our farmers to get knowledge about agriculture activities like crop choice, seed variety, plant protection and market rate.
- ❖ 25,000 Villages and 2, 50,000 education institutions will be connected to the internet by 2019.

There are almost 42000 villages where there is no mobile connectivity will be connected to the network in coming years.

- ❖ Industries like Banking, Insurance, Hospitality, Railways will get maximum benefit from Digital India project.
- ❖ Digital lockers will help the people of India to store their important documents like PAN card, Passport, Degrees and certificates digitally.
- ❖ E-Sign will help electronically signed the documents.
- ❖ Digital India plays a dominant role in reducing the major problems of the country like Corruption, Quick Working, reducing paper work and increased efficiency of business and more business opportunities.

## **BARRIERS**

Digital India is a great plan but its improper implementation due to inaccessibility and inflexibility to requisite can lead to its failure. There are few barriers of Digital India Programme:-

- a) Each pillar has its own barriers.
- b) Infrastructure deficit such as lack of towers, especially in the country side.
- c) Implementing entities at the actual field
- d) Auxiliary services such as health, education, banking, governance etc may not be well developed.
- e) Illiterate farmers are unable to benefit from these services as they do not even know how to use internet.
- f) No separate entity for consumer redress under the program.
- g) The entire programme is designed as a top level model on the technological front. There is hardly any guidance on how to implement the same on the ground level to make it successful.
- h) Improving IT literacy is very important because the entire mass who is using internet should know how to secure their online data. Providing proper usability guidance of Anti-Virus software and its role in securing the records should happen simultaneously.
- i) Each and every citizen of India would have all the personal details online such as their bank account number, PAN number, Income tax details, if not secured it will create a huge problem for every citizen.
- j) If majority of people start using online, then definitely the government portal server will start getting more and more number of hits day by day, which will hang or slow the server.
- k) Since all the departments like Income tax, LIC, election commission, Passport department will have ample sensitive data of citizens, thus there is a high possibility of data breaches once majority of the population become digitally literate.

## **REMEDIES**

- New programs must be needed-particularly in electronics manufacturing and skill development.
- Needs a dedicated training institute in each state under DIP, to aid in augmenting the digital literacy and awareness level.
- Have to inspire the citizens for making effective DIP.
- Government should regularly conduct seminars to aware people about the digital services which have to be introduced in near future.
- Government should advertise the policies of DIP in books, pen, TV, Newspapers etc. so that citizen could aware about the electronic services.
- Conduct a lecture about Digital India in every educational institute to enhance the policies.
- To launch a help-line number of DIP so that people can tell the problems related to e-services.
- Provide a help centre in each state to solve issues.
- To print the booklets of e-services with picture and distribute to each home for awareness.
- To turn the villages into smart economic centers that connects farmers to e-markets to get the well price of crops.

## CONCLUSION

Digital India is an ambitious programme introduced by the government of India. It was started to transform India into a digital world empowered with knowledge. It's a flagship programme of the government to shape by connectivity and technological opportunity. It is a vision to develop India. Government services will be rendered to each and every citizen of India. In government departments, there will be no corruption, more productivity, less paper work, more employment more informative way etc because of digitalization. Millions of jobs, mobile connectivity, internet highway, on line information and many more things will create a new India. Although, Digital India programme is facing some barriers, yet it will have a great impact on India to make the best future of every citizen. We Indians should work together to shape the knowledge economy and to make Digitalization successful in our country. Tech giants from all over the world are willing to actively participate in the digital India campaign. More and More employment prospects will open for the youth that will boost the nation's economy. The outcome of this campaign is to produce Wi-Fi locations for people, creating Jobs, global phone connection, High speed internet, Digital Inclusion, e-Services, e-governance, digitally motivated people, Digital lockers system, e-education and e-Health for the citizens of India.

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# BLOOMING EFFECTS OF SOCIAL MEDIA ON SOCIETY



## Introduction

- Social Media is an internet based platform through which people from different parts of the world can connect or interact to each other.
- Social media contains various websites like blogging websites, social networking websites, job oriented websites etc.

## Advantages

- Sharing of thoughts and ideas.  
Peoples with similar interests can create a group and share their thoughts and views.
- Information source.  
If any user wishes to take information about a single topic, he/she can easily view and download the content related to the topic from social networking sites at free of cost.
- Effective for marketing purpose.  
As social media has a global reach, organizations can advertise their products in front of a large number of people.



## Flourishing impacts of social media on different sectors of our society

- Impact on social relations.  
Social media helps us to make good friends, provides an opportunity in front of us to reconnect with our old colleagues and friends, allows bloggers & writers to share their views and ideas on a huge platform and provides an opportunity to establish a good connection with their clients.
- Impact on business sector.  
Social media can be used as a communication platform between the business organizations and their stock holders.
- Social media as a source of employment.  
Various social networking sites like monster and linkedin provides a platform to their users where they can upload their CV and find jobs according to their qualification.

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# BLOOMING EFFECTS OF SOCIAL MEDIA ON SOCIETY

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## **Abstract:**

*In today's time, social media has a very great impact on people's life. It is a website or an application through which one can create or share content publically. With the help of social media, one can create a huge platform for bloggers and writers to express their views and ideas and social media can stand as a platform for people to achieve a specific objective. Today a large number of people can find jobs through various social sites like LinkedIn, monster etc. Peoples with similar interests can create a group and share their thoughts and views. It is used as a platform for creating awareness among people on various issues, sharing of news etc., Many companies use it as a medium for advertising their products such as prices, quality and contents etc. Thus social media has a great impact on business too. Therefore, social media brings a revolutionary change in the society.*

**Keywords:** *Social Media, Digital, Platform, Media, Society.*

## **1-INTRODUCTION**

Social Media is an internet based platform through which people from different parts of the world can connect or interact to each other. Today various social media applications or tools or websites are available with different functionalities and characteristics. Social media contains various blogging websites, social networking websites, job oriented websites etc.

Nowadays people find social media as a very easy and convenient way of interaction and communication. A lot of people use social sites to share important and useful information with their friends and relatives. And the best part of social media is that people can access various social sites at a very cheap rate, some social sites allow people to share content and information free of cost. Thus we can say that today social media is the most cheaper and effective way of communication.

Most of the countries, either developed or under-developed are using social media for the betterment of the people. Social media had shown a tremendous growth in last 5 to 10 years. A large number of users are connected to social sites like Twitter and Facebook in a very less time. The most obvious reason for this tremendous growth is the benefits and advantages provided to the users by the social media. For business sector, social media is a perfect tool for customer interaction and customer feedback.

## **2-OBJECTIVES**

- (2.1) To illustrate the advantages of social media.
- (2.2) To find out how social media is useful and important for the society.

## **3-ADVANTAGES OF SOCIAL MEDIA**

There are many advantages of social media which are as follows:

### **3.1 SHARING OF THOUGHTS AND IDEAS**

Various social sites allow their users to express their thoughts and ideas on a similar topic. People having similar interests can easily share their ideas and thoughts by using blogging websites or social networking sites. With the help of social media, people can express their views on various social and political issues.

### **3.2 INFORMATION SOURCE**

People can also use social media as a source of information. If any user wishes to take information about a single topic, he/she can easily view and download the content related to the topic from social networking sites at free of cost. Various content sharing sites can be used as a source of information for different topics.

### **3.3 MAKES COMMUNICATION EASY**

Social media is a very effective communication tool. Many educational institutions use social media as a medium of communication with their students. Social networks are also used by teachers and learners for effective communication. Teachers can create groups on social networks for posting assignments and for sharing some useful information with their learners. For discussion on various topics, learners can also create groups on social networks.

### **3.4 EFFECTIVE FOR MARKETING PURPOSE**

Most of the organizations use social media for marketing of their products. Because social media is a platform where these firms/organizations can market their products very efficiently. As social media has a global reach, organizations can advertise their products in front of a large number of people. Many companies promote their products on social media for the growth of their business. Companies can also ask for a feedback about their product from the consumers so that they can utilize those opinions and feedback for the betterment of their product. For many companies & organizations, social networking sites are the most effective way of promoting products.

### **3.5 COST EFFECTIVE**

The usage of social media is cheaper in comparison to other forms of media like print media or electronic media. And mostly people can use social media platforms free of cost. Unlike in print media or electronic media, if we wish to publish a news/article, we have to pay a certain amount of money. And for small business organizations who wish to promote their products, social media is very useful because they don't have to pay a large amount of money.

### **3.6 LESS TIME NEEDED**

For academic and business purposes social media act as an effective time management medium of communication. By clicking a button, a person can easily browse useful information on various topics. To access social media platforms, a person only need a Smartphone or computer with internet connection. So, we can say that social media is less time consuming than other forms of media.

## **4-IMPACT OF SOCIAL MEDIA ON DIFFERENT SECTORS OF OUR SOCIETY**

Social media has a great impact on different sectors of our society. The use of social media is increasing day by day in our lives. So, various sectors of our society on which social media have a great impact they are stated as follows:

### **4.1-IMPACT ON EDUCATION SECTOR**

Social media has an impact on education sector because today most of the educational institutions are using social media to communicate with their students. Institutes post all their necessary details regarding courses, fee structure, eligibility criteria, etc on social platforms. This will help students to get information about the process of admission in various institutions. And this information provides luxury to the students to compare admission criteria of different institutes, so that they can decide in which institute they wish to apply for admission.

Now if we take example of teachers and students. Teachers use social media to interact with their students effectively. Teachers can convey messages to their students regarding college events, class assignments etc by using social media platforms. Social media also provides convenience to the students who are not able to attend classes regularly, they can take update from their classmates about assignments and college activities. So it shows that social media is beneficial for both teachers as well as students. And it proves that social media plays a very important role in the growth of our education sector.

## **4.2-IMPACT ON SOCIAL RELATIONS**

Social media has a great impact on our social life. Social media helps us to build good friendship or relationship with the people whom we don't know in the outside world. Social media allows people to communicate their thoughts and views on a variety of topics. With the help of social media, we can gather a number of people on a single platform for the achievement of a specific objective. Social media provides an opportunity in front of us to reconnect with our old colleagues and friends and also allows us to make new friends as well. By using social media, we can share pictures, audios, videos, content, etc. with our friends and relatives. Social media allows bloggers & writers to share their views and ideas on a huge platform and provides opportunity to establish a good connection with their clients. And social media brings awareness among the people regarding promotional events, campaigns, current incidents, etc, which help people to get up to date with the current scenarios .So that's why we can say that social media is playing an important role in improving our social relationships.

## **4.3-IMPACT ON BUSINESS SECTOR**

Recently some business organizations had shown a tremendous growth in their business by promoting and advertising their products on social media platforms. This shows that social media also has a great impact on business sector. Social media can be used as a communication platform between the business organizations and their stock holders. To attract their customers, many business organizations use social media as a platform for advertising their products.

Social media is also very beneficial to the customers too. Because on social media platforms, customers get a luxury to select / buy a product after comparing with various products of other companies. So, business organizations use social media as an effective way of interaction with their customers. Organizations use social media in the working of their various departments like HR department, Creative department, marketing department etc. Business organizations that are newly established in the market, they can use social media to attract the customers by providing them the additional benefits /facilities on the purchase of a product. So, the work of business organizations in promoting their products on a large platform has been eased out after the evolution of social media.

## **4.4-SOCIAL MEDIA AS A SOURCE OF EMPLOYMENT**

As we know, in today's time competition is increasing day by day between the youngsters to get a good job. And if we talk about government sector, around 1000 people (approx.) are fighting for 1 vacant post. So at this stage, social media acts as a source of employment to the people who are not able to get a good job. Because various social networking sites like monster and LinkedIn provides a platform to their users where they can upload their CV and find jobs according to their qualification. And today various companies related to different fields are showing their interest in recruiting workers through social media.

Social networking sites update their users time to time about vacancy of posts in different companies so that they can apply for a job in various companies according to their qualification and eligibility. And social media provides freedom to the people to select a job according to their choice. So, social media is also very beneficial for the people who wish to get employment according to their interest.

## **4.5 IMPACT OF SOCIAL MEDIA ON YOUTH**

Whom did social media impact the most?

Undoubtedly the answer to this question is youngsters. This is because most of the people who are using social media are from our young generation. Youngsters spend a lot of time to access various social networking sites like twitter and Facebook. Youngsters use social media platforms to get connected with their relatives and friends. By using social media, youngsters can share /express their thinking and ideas on various topics with their known persons. Social media is also a very good source of entertainment for youngsters because on social sites like YouTube, they can watch movies and videos online anytime. The only thing they need is a Smartphone/computer device with internet connection. Another advantage of social media for youngsters is that they can exchange /share useful information with their friends by using various social networking websites.



Nowadays, the biggest question that is raised among the young generation is that in which field they can make a good career. So, social media platforms can help the youngsters to find a solution of the queries related to their career. Social networking sites provides a platform for the youngsters where they can interact with the counselors related to different fields and can ask their queries related to the career. So it becomes much easier for the young generation to get connected with social media to fulfill their various objectives.

That's why we can say that youngsters are the people whom social media has impacted the most.

## 5. CONCLUSION

So, we can conclude it by saying that 'As social media is growing day by day, its impact is also increasing on the people of our society'. But we can't ignore the fact that social media also had some disadvantages. If people don't use social media in a right manner it may cause various problems like cyber bullying, addiction to the youngsters etc. But these problems can be curbed easily by adapting some security measures and by using social media platforms carefully. And I think that if used properly, social media has more advantages than disadvantages. Business organizations use social media to fulfill their various objectives related to business. And people can use social media as a medium of communication and interaction with their friends & relatives. Social media allows people to make new friends by using various social networking websites. Many unemployed people can get jobs by connecting with social sites like LinkedIn, Monster etc. Bloggers and writers can use social media as a platform for sharing their views and ideas. Teachers and students can use social media for effective interaction. So, at last we can say that if social media is being used without getting addicted it is very beneficial for the people of our society.

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# Li-Fi (Light Fidelity) The Future Technology In Wireless Communication

## INTRODUCTION

Li-Fi is transmission of data through illumination by taking the fiber out of fiber optics by sending data through a LED light bulb that varies in intensity faster than the human eye can follow. Li-Fi is the term some have used to label the fast and cheap wireless-communication system, which is the optical version of Wi-Fi.

The LED intensity is modulated so rapidly that human eye cannot notice, so the output appears constant. More sophisticated techniques could dramatically increase VLC data rate.



## WORKING TECHNOLOGY

This brilliant idea was first showcased by Harald Haas from University of Edinburgh, in his TED Global talk on VLC. He explained, Very simple, if the LED is on, you transmit a digital 1, if it's off you transmit 0. The LEDs can be switched on and off very quickly, which gives nice opportunities for transmitting data.

So what you require at all are some LEDs and a controller that code data into those LEDs. We have to just vary the rate at which the LED's flicker depending upon the data we want to encode.



## COMPARISON BETWEEN Li-Fi & Wi-Fi

Li-Fi is a term of one used to describe visible light communication technology applied to high speed wireless communication. It acquired this name due to the similarity to Wi-Fi, only using light instead of radio. Wi-Fi is great for general wireless coverage within buildings.

Li-Fi is ideal for high density wireless data coverage in confined area and for relieving radio interference issues, so the two technologies can be considered complimentary.

Characteristic	Wi-Fi	Li-Fi
Frequency	5 GHz	No frequency for light
Standard	IEEE 802.11	IEEE 802.10
Range	100 meters	Based on LED light
Primary application	Wireless local area networking Cost Low-Medium-high	Wireless local area networking
Data transfer rate	500 Mbps - 11 Mbps	>1 Gbps
Power consumption	Medium	Low
Cost	Medium	High
Security	Its medium secure	Its High secure

## How it is different

1. The Transfer of the data can be with the help of all kind of light no matter the part of the spectrum that they belong.
2. That is the lighting can be belong to the invisible ultra-violet or the part of the spectrum.
3. The speed of the internet incredibly high and you can download movies, song, softwares easily in few seconds and also you can access any website in few second of time

# LI-FI (LIGHT FIDELITY) THE FUTURE TECHNOLOGY IN WIRELESS COMMUNICATION

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## Abstract

World is now increasingly becoming victim of electromagnetic congestion, simply there are too many airwaves used by different devices in different spectrums squeezing into the unseen spectrum. Many a times while hooking onto the public Wi-Fi or whether a private Hotspot, the problem of slow access speeds have been experienced by many; As and when more than one device is tapped to the same network. The situation shall further worsen owing to the rise of intelligent devices. One German physicist has successfully developed a solution to it. Harald Haas has come up with a solution he calls "data through illumination" –taking the fiber out of fiber optic by sending data through an LED light bulb that varies in intensity faster than the human eye can follow. It kind of similar to the infrared remote and IrDa systems but only, it's far more powerful. Haas says his invention, which he calls D-LIGHT, can produce data rates faster than 10 megabits per second, which is speedier than your average broadband connection. In his vision laptops, smart phones of the future share data via a light in the room. For the security part, well if there is no access to light i.e. you can't see the light you can't access the data.

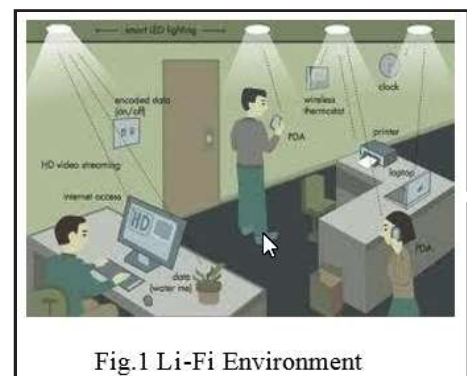
**Keywords:** LED (Light emitted diode), Wi-Fi, VLC

## INTRODUCTION

LiFi is transmission of data through illumination by taking the fiber out of fiber optics by sending data through a LED light bulb that varies in intensity faster than the human eye can follow. Li-Fi is the term some have used to label the fast and cheap wireless-communication system, which is the optical version of Wi-Fi. The term was first used in this context by Harald Haas in his TED Global talk on Visible Light Communication. —At the heart of this technology is a new generation of high brightness light-emitting diodes, says Harald Haas from the University of Edinburgh, UK, Very simply, if the LED is on, you transmit a digital 1, if it's off you transmit a 0, Haas says, —They can be switched on and off very quickly, which gives nice opportunities for transmitted data. It is possible to encode data in the light by varying the rate at which the LEDs flicker on and off to give different strings of 1s and 0s. The LED intensity is modulated so rapidly that human eye cannot notice, so the output appears constant. More sophisticated techniques could dramatically increase VLC data rate. Terms at the University of Oxford and the University of Edinburgh are focusing on parallel data transmission using array of LEDs, where each LED transmits a different data stream. Other group are using mixtures of red, green and blue LEDs to alter the light frequency encoding a different data channel. Li-Fi, as it has been dubbed, has already achieved blisteringly high speed in the lab. Researchers at the Heinrich Hertz Institute in Berlin, Germany have reached data rates of over 500 megabytes per second using a standard white-light LED. The technology was demonstrated at the 2012

Consumer Electronics Show in Las Vegas using a pair of Casio smart phones to exchange data using light of varying intensity given off from their screens, detectable at a distance of up to ten meters.

In October 2011 a number of companies and industry groups formed the Li-Fi Consortium, to promote



high-speed optical wireless systems and to overcome the limited amount of radio-based wireless spectrum available by exploiting a completely different part of the electromagnetic spectrum. The consortium believes it is possible to achieve more than 10 Gbps, theoretically allowing a high-definition film to be downloaded in 30 seconds.

## WORKING TECHNOLOGY

This brilliant idea was first showcased by Harald Haas from University of Edinburgh, UK, in his TED Global talk on VLC. He explained, 'Very simple, if the LED is on, you transmit a digital 1, if it's off you transmit a 0. The LEDs can be switched on and off very quickly, which gives nice opportunities for transmitting data. So what you require at all are some LEDs and a controller that code data into those LEDs. We have to just vary the rate at which the LED's flicker depending upon the data we want to encode. Further enhancements can be made in this method, like using an array of LEDs for parallel data transmission, or using mixtures of red, green and blue LEDs to alter the light's frequency with each frequency encoding a different data channel. Such advancements promise a theoretical speed of 10 Gbps – meaning you can download a full high-definition film in just 30 seconds. Simply awesome! But blazingly fast data rates and depleting bandwidths worldwide are not the only reasons that give this technology an upper hand. Since Li-Fi uses just the light, it can be used safely in aircrafts and hospitals that are prone to interference from radio waves. This can even work underwater where Wi-Fi fails completely, thereby throwing open endless opportunities for military operations.

Imagine only needing to hover under a street lamp to get public internet access, or downloading a movie from the lamp on your desk. There's a new technology on the block which could, quite literally as well as metaphorically, 'throw light on' how to meet the ever-increasing demand for high-speed wireless connectivity. Radio waves are replaced by light waves in a new method of data transmission which is being called Li-Fi. Light-emitting diodes can be switched on and off faster than the human eye can detect, causing the light source to appear to be on continuously. A flickering light can be incredibly annoying, but has turned out to have its upside, being precisely what makes it possible to use light for wireless data transmission. Light-emitting diodes (commonly referred to as LEDs and found in traffic and street lights, car brake lights, remote control units and countless other applications) can be switched on and off faster than the human eye can detect, causing the light source to appear to be on continuously, even though it is in fact 'flickering'. This invisible on-off activity enables a kind of data transmission using binary codes: switching on an LED is a logical '1', switching it off is a logical '0'. Information can therefore be encoded in the light by varying the rate at which the LEDs flicker on and off to give different strings of 1s and 0s. This method of using rapid pulses of light to transmit information wirelessly is technically referred to as Visible Light Communication (VLC), though its potential to compete with conventional Wi-Fi has inspired the popular characterisation Li-Fi.

### 2.1 Visible light communication (VLC)- “A potential solution to the global wireless spectrum shortage”

LiFi (Light Fidelity) is a fast and cheap optical version of Wi-Fi, the technology of which is based on Visible Light Communication (VLC). VLC is a data communication medium, which uses visible light between 400 THz (780 nm) and 800 THz (375 nm) as optical carrier for data transmission and illumination. It uses fast pulses of light to transmit information wirelessly. The main components of this communication system are 1) a high brightness white LED, which acts as a communication source and 2) a silicon photodiode which shows good response to visible wavelength region serving as the receiving element? LED can be switched on and off to generate digital strings of 1s and 0s. Data can be encoded in the light to generate a new data stream by varying the flickering rate of the LED. To be clearer, by modulating the LED light with the data signal, the

LED illumination can be used as a communication source. As the flickering rate is so fast, the LED output appears constant to the human eye. A data rate of greater than 100 Mbps is possible by using high speed LEDs with appropriate multiplexing techniques. VLC data rate can be increased by parallel data transmission using LED arrays where each LED transmits a different data stream. There are reasons to prefer LED as the light source in VLC while a lot of other illumination devices like fluorescent lamp, incandescent bulb etc. are available.

## COMPARISION BETWEEN Li-Fi & Wi-Fi

LI-FI is a term of one used to describe visible light communication technology applied to high speed wireless communication. It acquired this name due to the similarity to WI-FI, only using light instead of radio WI-FI is great for general wireless coverage within buildings, and li-fi is ideal for high density wireless data coverage in confined area and for relieving radio interference issues, so the two technologies can be considered complimentary.

### 3.1 How it is different?

Li-Fi technology is based on LEDs for the transfer of data.

The transfer of the data can be with the help of all kinds of light, no matter the part of the spectrum that they belong. That is, the light can belong to the invisible, ultraviolet or the visible part of the spectrum. Also, the speed of the internet is incredibly high and you can download movies, games, music etc. in just a few minutes with the help of this technology. Also, the technology removes limitations that have been put on the user by the Wi-Fi. You no more need to be in a region that is Wi-Fi enabled to have access to the internet. You can simply stand under any form of light and surf the internet as the connection is made in case of any light presence. There cannot be anything better than this technology.

## APPLICATION OF LI-FI

### 4.1 You Might Just Live Longer

For a long time, medical technology has lagged behind the rest of the wireless world. Operating rooms do not allow Wi-Fi over radiation concerns, and there is also that whole lack of dedicated spectrum. While Wi-Fi is in place in many hospitals, interference from cell phones and computers can block signals from monitoring equipment. Li-Fi solves both problems: lights are not only allowed in operating rooms, but tend to be the most glaring (pun intended) fixtures in the room. And, as Haas mentions in his TED Talk, Li-Fi has 10,000 times the spectrum of Wi-Fi, so maybe we can, I don't know, delegate red light to priority medical data. Code Red!

### 4.2 Airlines

Airline Wi-Fi. Ugh. Nothing says captive audience like having to pay for the "service" of dial-up speed Wi-Fi on the plane. And don't get me started on the pricing. The best I've heard so far is that passengers will "soon" be offered a "high-speed like" connection on some airlines. United is planning on speeds as high as **9.8 Mbps** per plane. Uh, I have twice that capacity in my living room. And at the same price as checking a bag, I expect it. Li-Fi could easily introduce that sort of speed to each seat's reading light. I'll be the guy Wowing next to you. It's better than listening to you tell me about your wildly successful son, ma'am.

### 4.3 Smarter Power Plants

Wi-Fi and many other radiation types are bad for sensitive areas. Like those surrounding power plants. But power plants need fast, inter-connected data systems to monitor things like demand, grid integrity and (in nuclear plants) core temperature. The savings from proper monitoring at a single power plant can add up to hundreds of thousands of dollars. Li-Fi could offer safe, abundant connectivity for all areas of these sensitive locations. Not only would this save money related to currently y implemented solutions, but the draw on a power plant's own reserves could be lessened if they haven't yet converted to LED lighting

#### 4.4 Undersea Awesome ends

Underwater ROVs, those favorite toys of treasure seekers and James Cameron, operate from large cables that supply their power and allow them to receive signals from their pilots above. ROVs work great, except when the tether isn't long enough to explore an area, or when it gets stuck on something. If their wires were cut and replaced with light — say from a submerged, high-powered lamp — then they would be much freer to explore. They could also use their headlamps to communicate with each other, processing data autonomously and referring findings periodically back to the surface, all the while obtaining their next batch of orders.

#### 4.5. It Could Keep You Informed and Save Lives

Say there's an earthquake in New York. Or a hurricane. Take your pick — it's a wacky city. The average New Yorker may not know what the protocols are for those kinds of disasters. Until they pass under a street light, that is. Remember, with Li-Fi, if there's light, you're online. Subway stations and tunnels common dead zones for most emergency communications, pose no obstruction. Plus, in times less stressing cities could opt to provide cheap high-speed Web access to every street corner.

#### USES IN VARIOUS AREAS

Can be used in the places where it is difficult to lay the optical fiber like hospitals. In operation theatre Life can be used for modern medical instruments. In traffic signals Life can be use which will communicate with the LED lights of the cars and accident numbers can be decreased. Thousand and millions of street lamps can be transferred to Life lamps to transfer data. In aircraft Life can be used for data transmission. It can be used in petroleum or chemical plants where other transmission or frequencies could be hazardous.

#### CONCLUSION

The possibilities are numerous and can be explored further. If his technology can be put into practical use, every bulb can be used something like a Wi-Fi hotspot to transmit wireless data and we will proceed toward the cleaner, greener, safer and brighter future. The concept of Li-Fi is currently attracting a great deal of interest, not least because it may offer a genuine and very efficient alternative to radio-based wireless. As a growing number of people and their many devices access wireless internet, the airwaves are becoming increasingly clogged, making it more and more difficult to get a reliable, high-speed signal. This may solve issues such as the shortage of radio-frequency bandwidth and also allow internet where traditional radio based wireless isn't allowed such as aircraft or hospitals. One of the shortcomings however is that it only work in direct line of sight.

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# DIGITAL LOCKERS

## ROLE OF E-LOCKERS

### *Digital Lockers*

- Security of the documents that is downloaded and uploaded.
- Protection of the data.
- Digital India program commenced by the Narendra Modi Government.
- Website or portal for uploading the documents online.

### *Perceived ease of use*

- Customer comprehend a new product and service as preferable as its alternative
- Banking on internet will include a least effort
- Cites the capability of customers to demonstrate with a current alteration
- Customers can easily store and manage their documents.
- The facility of linking through Aadhaar and electronic sign assistance for their documents.



### *Perceived risk*

- Security issues have demonstrated major hurdle to the utilization of online services.
- Owner has the right to perceive and split the documents according to their own need.
- Effectiveness of digital lockers may be in uncertainty between the residents because of hacking and misuse cases.
- The local bodies providing the documents can impel the certificates in analog (digital) structure directly in the digital lockers.

### *Variety of Services*

- For assembling the operation of using web pages efficiently.
- Aadhaar is linked with digital lockers to reduce the utilization of physical documents.
- To issue originality of e-documents.
- Safe access to government authorized documents.



# DIGITAL LOCKERS- ROLE OF E-LOCKERS

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## **ABSTRACT:**

*Splitting documents and files with the government and private agencies nowadays for distinct reasons is a difficult task. 'DIGILOCKER' (or digital locker) is a current digital locker solution commenced by the NARENDRA MODI GOVERNMENT under its "Digital India Programme" in July 2015. Digital locker intended at reducing the operation of physical documents and permit splitting of e-documents over agencies. The digital documents or files are stored in the digital locker i.e., it acts as a repository for each and every citizen of the country. The splitting of the e-document will be processed through registered repositories which ensure that sharing of documents online is authentic. DIGILOCKERS helps resident to store the documents, files, certificates etc. online. The portal is linked through UID Aadhaar card. This paper is based on how beneficial will be the digital lockers. It also attempt to explore the factors such as perceived ease of use, social influence, variety of service and perceived risk and their influence on digital locker usefulness for Indian citizen. A beneficial evaluation technique was recruiting to collect the data and information from 165 responders constituting the required range of demographic features (e.g. education, age, gender, etc.). The detection suggests that Perceived ease of use, variety of services has a powerful supportive impact on effectiveness of Digital locker while recognizing risk and social influence has less effect on Indian consumer.*

**Keywords:***Digital Locker, Perceived Ease of Use, Social Influence, Recognizing Risk, Online Repositories.*

## **INTRODUCTION:-**

Today everyone remains online as today's world is known as the phase of internet. At some instant or other everyone had uploaded and downloaded some files and documents for basis, for instance, lining forms, to send essential documents and files etc. Since the users share the documents online so they have faced the concern about the protection of the information that has been written in their documents and files being disclosed. Therefore, it has become a universal task to see the security and privacy concern of the user's data. 'DIGILOCKER' (or digital locker), a current digital locker solution commenced by the NARENDRA MODI GOVERNMENT under its "Digital India Programme" in July 2015. Basically digital locker is a website or a portal which is responsible for reserving and uploading the documents of the users like PAN Card, passport, mark sheets and degree certificates.

The main objective of digital lockers is to abolish the utilization of manual documents and permits splitting of e-documents over agencies. The individual storage space is also issued in the cloud to residents is issued by the digital lockers associated to the residents Aadhaar number. It also provides the right to the residents to upload their legal documents securely. The digital lockers are provided with the electronic sign facility (e-sign) that is the user can upload their legal documents using the e-sign feature. A user or a resident can split their electronic documents online with different agencies and departments enlisted on the digital locker while appealing for the systems issued by them. Thus it connects the citizens, issuers and requestors by including them on the similar platform.

## **CHARACTERISTICS OF DIGITAL LOCKERS:-**

The following characteristics are accessible for the users of digital lockers:-

1. Each and every citizen's digital locker is associated to their Aadhaar number.
2. Every citizen is allocated with 10 MB of free space in the lockers to safely reserve citizen's files and documents and also reserve the links (also called URL) of the Govt. agencies to which the electronic documents are concerned. The storage space assigned to the users can be extended to 1 GB when required.
3. The documents that are shared online are signed electronically by e-singed services provided by



the electronic lockers.

4. Splitting of the electronic documents with any enlisted department.
5. It has the record of issuers that have the electronic documents to citizens and also contains the record of claimers which have retrieved citizen's documents and files.

In the citizens digital lockers the issuers who subject the electronic documents like the universities, schools, government agencies there is a feature through which they can upload their documents in a standard XML format in the repository of digital lockers. For claimers the security approach to the documents has been provided.

Each and every user account has been categorized into two types of documents:-

- Digital documents that accommodate the URL (links) of the documents provided to the citizen by the agencies.
- Uploaded documents that are uploaded by the citizens. It can be the SSC Certificate, HSC Certificate, PAN card, Voter ID card, etc. To make these documents valid it has to be signed electronically and provided to the claimers.

Every document that is uploaded can be of 1MB max and it can be in pdf, jpg, jpeg, png, bmp, gif file types.

A new genre of digital locker was introduced in February 2015 named as Beta version. After that more than 2.5 lakhs people have submitted and uploaded more than 1.8 lakhs documents according to the research. In appellation of states, Madhya Pradesh has more than 31000 users followed by Uttar Pradesh with close to 31000 users followed by Maharashtra with more than 23000 users.

#### **LITERATURE ANALYSIS:-**

The main point of the research paper is to recognize if the digital locker is beneficial for the residents of India. For this reason various factors have been considered and its impact on digital lockers usefulness is perceived.

The factors are:-

#### **Perceived Ease of use:-**

According to a study, perceived ease of use is the phase that constitutes the degree to which an alteration is recognized not to be hard to comprehend, assimilate or operate. It was also affirmed that perceived ease of use is the degree to which customer comprehend a new product and service as preferable as its alternative. That means, the degree to which an alteration is elementary to grasp is perceived ease of use. In case of banking the perceived ease of use is the customers recognition that banking on internet will include a least effort. Likewise, it was acclaimed that perceived ease of use cites the capability of customers to demonstrate with a current alteration and assess its advantages easily. It has become very easy for the customers since digital lockers gave them a platform to store and mange their important documents and files securely. The perceived of use has become very beneficial for the citizens as it provides the facility of linking through Aadhaar and electronic sign assistance for their documents.

#### **Perceived risk:-**

The customers are worried about the security and privacy issues since more and more data has been uploaded online. According to the research the security and privacy issues have demonstrate major hurdle to the utilization of online services.[3] Since trust, security, and privacy are complex constructs and require additional clarifications, importance is given to perceived risk included in utilizing digital locker.[1] Exclusively the owner has the right to perceive and split the documents according to their own need according to press release by government of India. But nowadays hacking and misuse cases are increasing day by day; effectiveness of digital lockers may be in uncertainty between the residents. Abolishing the threat of pirated document, the local bodies providing the documents can impel the certificates in analog (digital) structure directly in the digital lockers. So, this will be beneficial to the persons for whom it is hard to have actual storage space for physical documents and files. At the time of natural disasters such as floods, cyclones, fire, etc, it is going to be safe.

**Variety of services (VOS):-**

For assembling the operation of using web pages efficiently, variety of services has been issued by the digital lockers. Corresponding to a survey India has around fifty eight thousand (58,000) Aadhaar linked Digital Locker. The basic concept of linking the Aadhaar with digital locker is to reduce the utilization of physical documents and to issue originality to e-documents. It ensures users a safe access to government authorized documents. It will make it simple for the citizens to collect services. The digital locker can be used to electronically sign the e-documents. Although the services given by the digital locker is less effective than the services provided by e-commerce websites.

**Social Influence (SI):-**

The idea of social influence (SI) rises to the scope to which an individual understands that they should utilize the new system. According to the research, SI is related to the subject norms, and recounts as an individual's perspective regarding if another person's become indulged in the activity. Subject norms is considered into account in phrase of both TPB (Theory of Planned Behavior) and TRA (Theory of Reasoned Action) as the basic aspect agitated with recounting the implementation of system. According to the theory of DOI (Diffusion of innovation) social influence is divided into two types, i.e., interpersonal influence and mass media.

Interpersonal influence is obtained from social system via friends, peers, superiors etc., while mass media influence constitutes internet, newspapers, magazines, radio, television, and other mediums. Social influence governs the appropriation goal of technology (TAM, association between social influence and perceived usefulness). Therefore social influence may have a enthusiastic influence on Digital locker usefulness.

**Perceived usefulness (PU):-**

In the branch of electronic banking the significance of perceived usefulness has been extensively acknowledged. According to them utilizing the technology would upgrade the method in which a user can accomplish a task.[4] TAM states that perceived usefulness is the stage to which people conclude that utilizing a specific system would upgrade his or her task presentation. Perceived usefulness introduce to customers recognition concerning about the result of the experience. As per the study perceived usefulness as the discrete person's recognition that utilizing the current technology will improve the individual's performance.

The other study states that perceived usefulness is the scope to which an individual considers a specific system to enhance their performance. Digital lockers reduce the demand of physical documents. For instance, if a person's birth certificates and educational certificates are online, he/she can claim for a passport, and the office (passport office) can utilize that persons Aadhaar number to appeal the digital lockers for information, instead of considering the large files documents i.e., physical documents for the application.

Thus it increases the presentation and it is also beneficial for the customers.

For research the successive assumptions are used:-

- Between the residents of India Perceived ease of use has a approving impact towards Perceived usefulness.
- Perceived risk had a great impact on the perceived usefulness between digital lockers users in India.
- Variety of service had a great impact on the perceived usefulness between digital lockers users in India.
- Social influence will have a remarkable impact on escalating perceived usefulness between digital locker users.

**CONCLUSION:-**

The main goal of paper is to recognize if digital locker is convenient for the citizens of India. It can be done by using the four variables that are perceived ease of use, variety of services, Social influence and perceived risk were considered. Perceived ease of use and variety of services has affirmative impact on digital locker usefulness. Social influence can contribute in generating more realization between the residents of India but it did not have powerful impact on digital locker usefulness. Perceived risk has affirmative impact but it does not signify powerful relation as contrast to other factors. Digital locker will be useful for the residents in linking with government.

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# LEVERAGING DIGITAL SKILLS FOR INNOVATION IN THE SOCIETY

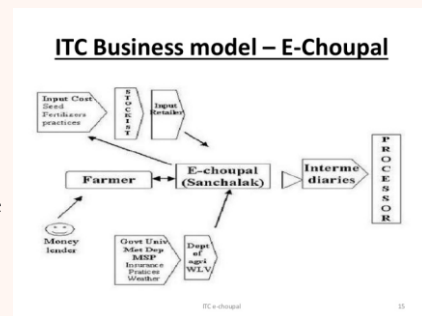
## INTRODUCTION

- Digital revolution transforms in new digital world
- Replacing methods like letters, postcards are replaced by E-choupal , E-mitra, E-bussiness sector, cashless economy in the modern india.
- Transforms & creating new innovations in the society.
- Creating sensors for innovating digital era.( Artificial intelligence, cloud computing, internet of things) used in the daily life.



## E-CHOUPAL

- A village meeting place
- Based on the ITC(information and the communication technology)
- Sanchlak (HEAD OF GRAM PANCHAYAT) provides computer system to all those farmers to with proper internet connections to interact all the users and solve whatever the problem.
- System can gather all the information like(weather conditions, best farming practices, market prices for regional market place(or mandis).



## E-GRAM

- Project innovative by the Gujrat Government
- Family income is digitally generalized and issue all the certificates at the gram panchayat level.
- Software is designed by the NIC(national information center)like birth & Death certificates.

## CONCLUSION

- Many of the innovations are provided in the world of digital era.
- It can transforms our lives more continently to all the users.Automation of technology rapidly glooming in the digital environment which change our environment more easily accessible to all the data.

# LEVERAGING DIGITAL SKILLS FOR INNOVATION IN SOCIETY

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## **ABSTRACT:**

*Digitalisation is one of the vital processes in the modern day society impacting millions of people and industries across the world. The Digital revolution has transformed our lives in a new digital era where, the letters, postcards and festival cards we wrote for so many years are replaced by e-Cards, e-mails, Facebook updates, tweets and WhatsApp messages. With Digitization we have achieved increased mobility, less need of a dedicated work space, increased productivity from new tools. Digitalisation, as we call it today, is sweeping across every aspect of our daily lives in all possible ways. Right from gathering the news we find in the newspapers every morning to the billing process at our neighbourhood grocery shop, it is digital technology that is making tasks faster and more accurate. In this paper we discuss how digital technology can be leveraged to carry out innovation across different areas in the society. This paper focuses on discussing ideas and thoughts that brought comprehensive change in our society viz. Automation of processes and businesses, Changing customer behavior (social media, mobility, engagement/experience), etc. Further, we talk about the challenges faced in the way to achieve digitalization of any new idea to bring transformation in the society. In the end, we discuss few real life cases where digital technology brings radical change to the life of people.*

**Keywords:** *Digitalisation, Innovation, Society, Automation, Cashless Economy*

## **INTRODUCTION**

In present scenario, progress of any society or nation is measured in terms of advancement in the technology they have achieved. Leveraging the benefit of digital technology becomes an inevitable part of the growth of any nation. Digitalisation of traditional processes or invention of new technology brings revolutionary transformation to the life of people from all walks of society.

Digitalisation is the process of transforming traditional methods of processing into more stable digital process aligned with the latest technology. With the introduction of different digital methods viz. e-Choupal, e-Mitra, Cashless Payment systems, Social Media Campaigning, Smart Classes, etc has impacted the life of different stakeholders in curbing various social issues. With economy going towards more and more cashless transactions, it helps in curbing the issue of corruption or black money. Similarly there are numerous examples where introduction of digital technology has brought revolutionary changes. Advancement in the IT sector, developing new technologies like Big Data, Artificial Intelligence, Cloud Computing, Internet of Things, Distributed Computing, Wearable Devices, etc has brought monumental changes in the day to day operations. Ranging from household activities to small, medium and heavy industry operations.

Today, with everything becoming more and more digital-based. Digitalization is crucial to data processing, storage and transmission; it allows information of all kinds in all formats to be carried with the same efficiency and also intermingled. This is why it is a favored way of preserving information for many organizations around the world.

Digitalisation is revolutionizing villages and society. And the combinatorial effects of these technologies – mobile, cloud; artificial intelligence, sensors and analytics, among others are accelerating progress exponentially. Digital information is everywhere around us and the devices to capture, process and retrieve digital information are available in every shopping mall or easily ordered using the Internet. A case where we need urgent attention is India's telecom infrastructure which is not developed properly as compared to other nations in west. While there are plans to upgrade the setup with a full-blown nationwide network, there is at the moment still a strikingly low level of phone access

outside the urban sectors. Mobility as preferred medium of purchase; social media as preferred communication channel; embedded systems for convenience and self-help services; cloud to be agile, scalable, cost effective, and for faster delivery; big data to understand customer needs better and stay relevant in the marketplace and augmented reality to enhance customer experience. Digitalisation can help to eliminate time waste by introducing wider access to data, or by implementation of enterprise resource planning systems.

This paper explores the potential opportunity from aforementioned disruptive technologies in various sectors comprehensively and suggests ways in which the IT providers and the user community can better capitalize on this opportunity. Technology players in turn must come up with integrated solutions that will enable businesses and society to address the dynamically changing demands of the new era effectively. Increasingly, the core business platform is no longer the only source of information and insights. Additional solutions based on new-age technologies are being integrated on to the core platform.

The level of technology adoption in India has grown immensely. The broad use of internet and mobile technology among general users made the process of digitalization more significant and relevant. A lot of that has got to do with India's economic development as a powerhouse of talent, with immense opportunity lying in different areas like education in rural regions, smart farming techniques, cash-free business transactions and many more. Technology is empowering a whole new wave of innovation and growth in the society that is aiding students, households and businesses. In this paper we discuss few outstanding examples of digitalization empowering rural India, processes which enables easy access to banking resources, methods to handle the burning issue of black money by moving towards Cashless transactions.

Outline of this paper is as follows: Literature review, we discuss past work relevant to the digitalization technique. Next, process of digitalisation is presented with already implemented techniques: e-Choupal, e-Banking, Smart classes. In the end we discuss about the future work and ideas.

## **LITERATURE REVIEW**

The act of digitizing is described by Frost in "Digital Preservation"[1], It is a way of conserving by changing the form. Digitizing takes the three media: verbal/visual, writing, and print and combines them into an interactive rendition. Using these ideas of transforming something into a new, enhanced material is what digitizing has the potential to do. Kognuramath and Angadi [2] and Srivastava and deuKanungo [3] have worked on relevant digital technology for preservation of traditional as well as digital documents. They have used Optical Character Recognition (OCR) software for scanning documents.

Bansode[4] says that digitization is the solution for the preservation of, and access to, rare manuscripts, and provides the complete budget required for the digitization of manuscripts and suggests best possible preservation and access strategy, according to the local needs of the users. The author provides valuable insight into the 13 development of digital libraries in India. It is useful for setting up the infrastructure required for digitization and a guideline for preservation and access to rare materials.

In[5],Bowonder,B et.al discussed the digitalisation process of village meeting place also known as e-Chaupal. e-Chaupal, an initiative by ITC limited, is a virtual market place which enable farmer to interact directly with a processor. For farmers, it helps in generating good revenue for their crops and other products. [6] Main advantage of using e-Chaupal platform is that it serves as a medium to connect large or small producers with users/consumers and hence eliminate need of middlemen or brokers. One of the limitations for effective implementation of e-Chaupal platform in any rural area is basic infrastructure like telecom network.

## PROCESS OF DIGITALISATION

In the recent years, Digitalisation has played an important role in the development of new technology and advanced solutions to cater the growing demands of developing countries like India. With the introduction of many new digital schemes a wave of transformation is sweeping across rural India. Digital schemes are empowering people from villages to get good prices for their products as well as it provides a sustainable model of development. In this section we discuss a few cases of digitalisation whereby it is playing a vital role in performing sell and purchase of agricultural products, business transactions, day-to-day life operations, curbing the black money issue with cashless transactions.

### E-Choupal

Agriculture industry plays the most important role in driving the Indian economy, needless to say agriculture is often termed as the backbone of the Indian economy. More than half of the Indian population lives in villages and rural India, the main source of earning livelihood for people in these places is farming or agriculture-related jobs. At the same time, profit in agriculture is dependent not only on the quality of the crop but also on the number of middlemen (brokers) involved in the value chain. Hence, farmers do not get the right price for their crops. To make a sustainable model, in the year 2000, ITC Limited took an initiative and launched the model of e-Choupal. It is like a village meeting place where vendors (or farmers) and customers sell/buy their crops or other agriculture-related products. It can be better understood as a virtual marketplace where farmers can directly sell their crops/products to the processor and it helps them in receiving a higher profit margin.

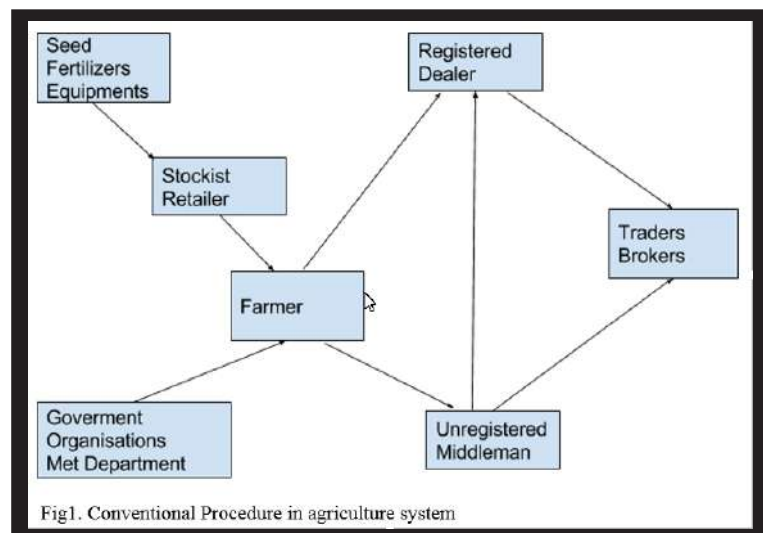
With the help of e-Choupal, farmers can eliminate the involvement of middlemen aka brokers.

#### How e-Choupal works?

E-Choupal is based on the ICT (Information and Communication Technology) platform for business. ITC Ltd. manages e-Choupal with the help of Sanchalaks. A Sanchalak is a lead farmer or expert in the domain, who works as an operator to handle all computer-related activities. In other words, Sanchalak provides support to farmers to interact with the computer systems. Sanchalak receives a good commission from ITC in every transaction he/she makes. The system gathers all the information regarding weather conditions, best farming practices, market prices (from regional marketplaces aka *Mandis*) and makes this information available to users. Information will be customized according to the need of local farmers in their local language through the computer with the help of Sanchalak. If a farmer chooses to sell his/her crop to ITC, Sanchalak works as a collector. Sanchalak also helps farmers by collecting their requirements for various items like seeds, fertilizers, pesticides, etc. and places orders on their behalf directly to the supplier.

#### Advantages of e-Choupal

- Helping farmers in realizing high profit margins
- Eliminating unnecessary intermediaries and brokers
- Availability of high quality seeds, fertilizers, pesticides and modern techniques of farming
- Availability of high quality crops for processing units
- Establishing a sustainable model of supply chain management in the highly unorganized agriculture sector
- Development of local leadership in rural areas
- Helps farmers in gaining knowledge about best practices in farming and knowledge about other marketplaces (*Mandis*), thus empowering them to expand their reach from local to global.



### Challenges in e-Choupal:

- High dependence on Sanchalak
- Basic infrastructure like Telecom network, Internet are required
- Local support to implement e-Choupal model

### E-Gram

One of the pioneer project of Gujarat government with the motive to improve the efficiency and effectiveness of service provided by government to rural population. Many people in rural areas need loans and subsidiaries for earning their livelihood. National and regional government banks provide loans once all the documents are submitted to the respective branches. In most of the cases these documents are submitted manually. In order to provide quality service to the rural people Gujarat government took an initiative, in 2003, to digitalize village records. The objective behind the project is:

- Issue of Certificates(Birth, Death, Bank, Ration cards, etc) and application forms for different services
- Fast grievance re dressal forum
- Commercial and financial services through e-Gram

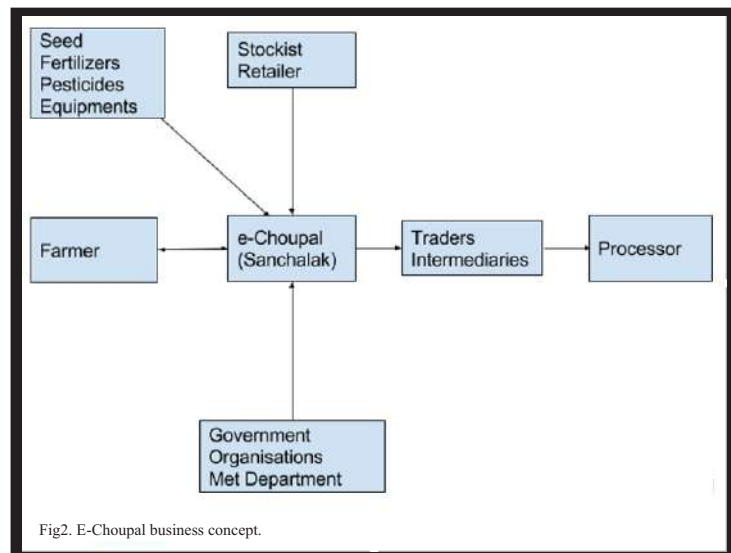


Fig2. E-Choupal business concept.

### How E- gram works?

E-Gram, like e-Choupal, comes under the ICT platform. A family databank, consisting of family information, is available digitally and can be used to issue certificates at Gram Panchayat level. The family information has been collected by conducting household family survey. The survey provides family information of all the members and the income withdrawn by the household. E Gram software has been designed and delivered by National Informatics Center (NIC). It can be used to issue certificates for Birth, Death, and Caste. Income, Marriage, Domicile, Tax collection, Property, Agriculture, Residence Proof, Land Ownership.

### Advantages:

- Easy access to important certificates
- Generation of valid Income Certificates
- Freedom from red tapism involved in government offices

### Disadvantages

- Document vulnerable to software corruption issues
- Dedicated technical team required for up gradation and maintenance of software

### Conclusion

India is a developing country and so do requirements of people in nation is also growing. With increase in the requirements, old conventional process becomes obsolete. To provide good quality services to the people, digitalisation of conventional process is one of the foremost tasks for any government and business houses.

Digitalisation helps in providing ease of business transaction to people in rural India like e-Choupal platform. With these kinds of services villagers are getting genuine prices for their products. Digitalisation provides vast depth of facilities and services to all the users by transforming conventional process or technique. With the more and more use of internet and smartphones various services are made available to users at their doorstep. These services can be used to brought different



kind of innovation in the society. Services like E Gram, provides easy access to some of the most difficult certificates and document to the rural people.

Digitalisation helps in curbing the black money issue; with the use of cashless transactions the illegal use of money can be checked. All cashless transactions can be tracked down by the income tax department and hence it is difficult to use it illegally.

With any technology, come new challenges. Digitalisation also faces much issue, ranging from data theft, hacking, software corruption, malicious programs, basic knowledge of technology, etc.

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# Security Issues in E-Commerce

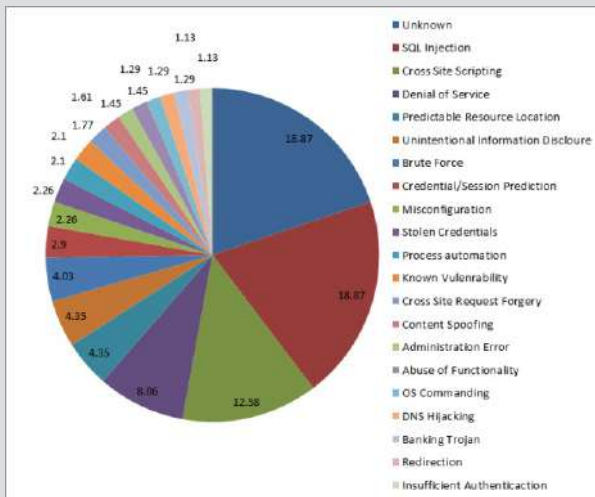
## Introduction

E-commerce is defined as the purchasing and selling of products and services online. Nowadays online shopping became a trend for youth. We can sell or purchase anything like cloths, houses, vehicles each and every necessary things of our daily life by just one click on the E-commerce websites with the help of internet access by sitting just at one place.



## E-Business Security Threats:

Unauthorised Internet Users  
Weak access points in information  
Proper Management  
Employee's mistakes  
Hackers



## Conclusion (Staying safe):

The seller is always responsible for security of the Internet-connected PC where customer details are handled.

Always keep multiple backups of essential information, and ensure they are stored safely. Provide work for professional online storage services which offer various levels of security. Government and industries have to work together on encryption, decide not only the power of the equipments but governmental access to keys necessary to decode encrypted information.

# SECURITY ISSUES IN E-COMMERCE

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## **Abstract:**

*E-commerce is defined as the buying and selling of products or services over electronic systems such as the Internet and to a minor scope, other computer networks. It is generally regarded as the sales and commercial function of E-business. In other words purchasing and selling anything online over the internet without making any effort sitting at one place is known as E-commerce. There has been a enormous boost in the level of trade conducted electronically since the extensive infiltration of the Internet. Along with the revolution in information technology sector and the Internet's high speed development, E-commerce has caused the significant transformation rapidly in current distribution area. This enormous increase in the development of E-Commerce has led to a new generation of related security threats, but any e-Commerce system must meet four fundamental requirements: Privacy – information exchanged must be kept hidden from illegal or unofficial parties. Integrity – the interchanged information must not be transformed or tampered with time. Authentication – both sender and receiver must verify each other's identities. On-repudiation – proof/evidence is essential that the exchanged information was definitely received. These basic steps of E-commerce are essential for conducting of secure business online. Additional to the fundamental steps of E-commerce, E-commerce service providers must also defend their systems against a number of dissimilar exterior security threats, most particularly Denial of Service (DOS). These are the basic knowledge of preventing E-commercial transactions from hackers. With the help of these steps an attempt should be made to make a computer resource unavailable to its unauthorized users though a variety of mechanism.*

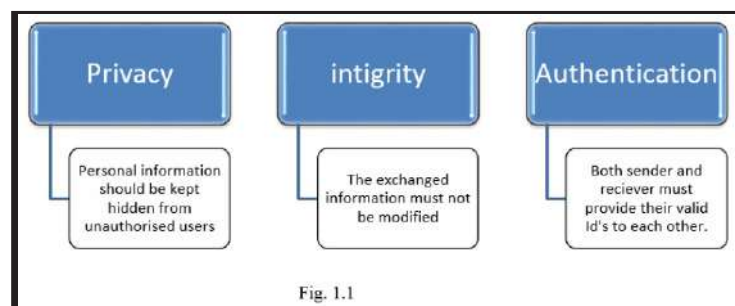
**Keyword:** *E-Commerce, Security, E-Business, Threats*

## **Introduction:-**

What is E-commerce? E-commerce is defined as the purchasing and selling of products and services online (over the internet). Nowadays online shopping became a trend for youth. It causes a boom in the industry of E-commerce we can sell or purchase anything such as clothes, houses, vehicles each and every necessary things of our daily life by just one click on the E-commerce websites with the help of internet access by sitting just at one place. It is the easiest method of shopping. But it is not as easy as it looks like because it also involves some risks they are given in the below diagram. Some or more common threats that hackers pose to E-commerce systems include Carrying out denial of service (DoS) assaults that stop access only to permitted users of website. The hackers gain access to the sensitive data such as price lists, email id's passwords etc and also gains access to financial information of the users and sometimes use viruses to corrupt your business data.

E-commerce:-

E-commerce (stands for electronic commercial business) is the accomplishment of business processes on over the internet. These electronic business processes consist of buying and selling products and services; servicing customers; handing out payments; overseeing production control; working mutually with the trade partners; sharing information; running automatic employee services; employing and much more. E-commerce covers a series/variety of different types of businesses, or commercial transactions that involves the transmission of information over the internet. It covers range of different types of businesses, from consumer based trade sites, through public sale or music sites, to company exchanges dealing of goods and services takes place between companies. It is at present one



of the most important features of the internet to emerge.

E-commerce allows all the consumers to buy or purchase goods and services electronically.

The road for creating successful electronic transactions could sometimes become difficult and cause much loss of money and our personal information if we are unaware of E-commerce standards and what E-commerce is expected to do for your online trade. United Kingdom had the biggest E-commerce market in the world when measured by the amount invested per capita. Economists have elaborated that E-commerce ought to direct to make stronger price competition, as it increases costumers capacity to assemble information about products and prices. E-commerce had the capability to mix all intercompany and intra company functions, meaning that the three flows:

Physical Flow

Financial Flow

Information Flow

Along with the E-commerce and its exclusive attraction that has emerged gradually, virtual enterprise, virtual bank, network marketing, online shopping, payment and advertising has become familiar to the people. This reflects that the E-commerce has huge impact on the economy and society itself.

History of E-commerce:-

E-commerce website was first set up in the 1960s by an electronic data interchange (EDI) on value added networks (VANs). The medium grew with the increased availability and increasing speed of internet access and the arrival of popular online sellers in the 1990s and early 2000s. Amazon began working as a book shipping business in Jeff Bezos' garage in 1995. E-Bay which enables consumers to sell to each other's online, launched online auctions in 1995 and blowed up with the 1997 Beanie Babies frenzy. Like any digital technology or consumer based purchasing market E-commerce has developed over the years. As mobile devices became more popular, mobile commerce has become its own market. With the rise of social networking sites like Facebook social media has become an important driver of E-commerce.

Categories of E-commerce:-

B2B (Business to Business):-This business involves companies doing business with each other for ex-manufacturers selling to distributors and wholesalers selling to retailers.

B2C (Business to Consumers):- B2C involves business with general public through shopping cart software or a website without any human effort.

C2B (Consumer to Business):-C2B involves consumers who post a project with a set budget online, and companies bid on the project. The customer reviews the bids and selects the companies.

C2C (Consumer to Consumer):- C2C involves consumer with consumers this takes place within online classified ads, forums or marketplaces where consumers can sell or purchase goods and services with each other its best example is OLX.

Distribution Channels:-

E-commerce has grown in importance as companies have adopted pure click and brick and click channel systems. We can distinguish pure click and brick and click channel systems. In addition to 80% of retailers state that online sails have increased in the past five years with some reporting increases of 25% or more. This has forced the retailers to change the traditional distribution system/network for their E-commerce models.

Security Issues faced by users in E-commerce:-

Many persons discuss secrecy and protection as if they are the same. They are different. When individuals perform private dealings there is a supposition that personal information is not being revealed to others. When a transaction is secure, it is thought to be protected from assault or corruption.

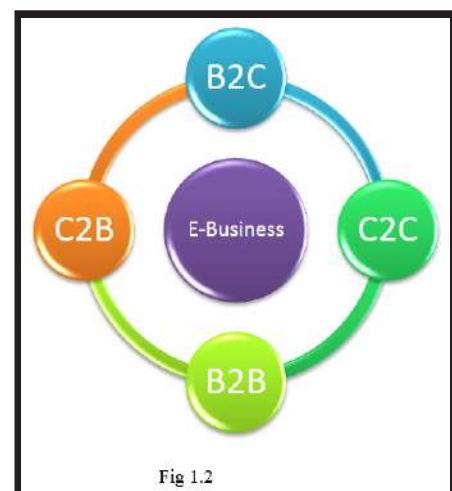


Fig 1.2

In this perspective, privacy is the ability of an individual to keep his identity secret in the course of a transaction. An unknown transaction, using cash as the means of payment, maintains confidentiality; the transaction, however, is not secure. On the other hand credit cards, offer security, but not privacy. Many individuals believe that the Internet is confidential. Since the Internet may be used in the privacy of homes or offices, there is an illusion that transactions are private. In most cases, however, some form of record is created, whether in the course of an electronic mail message to a friend, or in trading stock or reading the latest news online. Most private information, such as, e-mail address, postal address, name, sex and age are assembled when a user registers at a site. This information is also gathered from sponsorship advertisements," allowing you to enter a contest to win prizes in exchange for personal information.

The transmission of incorrect data, loss of identity, stolen credit card numbers and other possible contraventions are very tricky to deal with in the real world where it is possible to find out a starting point. In the new world of electronic commerce it may become impractical to resolve problems unless all of the right tools find wide implementation.

There are many threats to e-commerce that may come from sources within an organization or through some external channel. The following are the top E-business security threats classified by internal and external threats.

Unauthorized internal users who accesses confidential information by using stolen passwords for the purpose of committing hoax or theft.

Former employees of an institute that continues access to information resources directly by creating optional passwords, "back doors into the computer system, or indirectly through ex- co-workers.

Weak access points in information infrastructure and security that can bring out companies private/confidential information and its trade secrets.



Management that weakens the security is ought to be the greatest risk to e-commerce as there are continuously new 'electronic' threats to be aware of and fight with them.

Employee's silly mistakes or malicious work that causes data to be destroyed or corrupted.

Employees who receive or download inappropriate content from the Internet put the business institutions into cyber problems such as viruses or leakages of personal information

Service providers, collaborators, specialists, and temporary workers who take advantage of even limited access to important systems.

By Mistaken leak of secret or private data of the firm.

Hackers who cracks into the networks through an Internet connection and steal confidential, private, important information from the system of the firm.

These security threats are the most common as they can extend across corporate associations through file sharing and can be sent automatically to all catalogues in a system's address book.

### **Conclusion (Staying Safe):-**

The seller is always responsible for security of the Internet-connected PC where customer details are handled. For the virus protection the firewall is the minimum requirement for at least preventing our systems from harmful viruses and Trojan's. To be absolutely safe, sensitive information and customer details should be stored on pen drives or a physically separated PC drives. Always keep multiple back-ups of essential information, and ensure they are stored safely. You may wish to store highly confidential information (passwords, bank accounts, etc.) on password-protected directories on your PCs, but be sure to encrypt the files first and then store it. A better solution is to provide work for professional online

storage services which offer various levels of security. They are not expensive and are affordable to each and every individual, and some ISPs offer limited or a particular amount of storage free to their customers. Particularly these services are very much useful that allow customer's sensitive material or private data to be sent directly from your web pages and stored safely in a secure facility for later processing.

Government and industries have to work together on encryption, decide not only the power of the equipments but governmental access to keys necessary to decode encrypted information. By working together with government agencies the industries can influence the type of safeguards that are put into practice. If there is confrontation to cooperation with government agencies and the occurrence of fraud, crime and privacy continues to rise, legislative and other political solutions will be potentially became more inflexible.

The Internet and the World Wide Web offer enormous possibilities but some measures or steps are needed to be developed to prevent security threats from occurring in this environment of E-business. These issues need quick oath now in a supportive climate of industry and government working together. If action is postponed, both the industry and consumers will have to deal with the consequences of reactionary regulation in the very near future.

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# **SECTION B**

*Frontiers of Security Aspects*

**RESEARCH PAPERS**

*(Session 2015-2016)*

# CURRENT SCENARIO OF WEB DEVELOPMENT/BLOGGING IN INDIA

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## ABSTRACT

The term "Web Development" has a very broad meaning. On a very elementary level, Web Development means the efforts involved in creating or managing a website on the Internet (World Wide Web) or a local setup (a private network). Web development basically refers to the tasks associated with developing websites or web pages for hosting via Intranet or Internet. The process of Web Development includes Website designing, Website Content Development, Client/Server side scripting and Configuration of Network Security. In technical terms, "Web Development" generally consults with the main coding and scripting side aspects of building web sites. Website development requires a person or a team that can consist of two, three or even thousands of people which depends on the intensity of work or content needed. Smaller organizations or personal home based businesses may require only a single developer. Blogging is writing "Blogs". But it's not just about writing blog posts and sharing it along social media handles now. It's a way to express what you have got. Moreover people monetize their blogs for personal benefits, that's a good thing though because one deserves to be paid for the hard work. This paper mainly focuses on deep insights on current scenario of web development and blogging, challenges faced by web developers and what India still lacks even after achieving biggest goals in the whole world.

**KEYWORDS:** *Web Development, Web Designer, Freelancer, World Wide Web, Indian Society, Blogging*

## INTRODUCTION

"Web Designing" and "Web Development" are the two most misunderstood terms among people so far. They are being used by people so often conversely, but the persons who are using them really don't know the most important difference between them. Fundamentally Web designing is the frontend or user-side part of a website. Whereas, Web development is the backend (Coding-Part) of a website or a web page. A web developer focuses on how a site works and how the users easily get things done on it. A web developer can earn money or establish himself/herself as a reputed personality online in many ways. But why it's not happening? There are many restrictions in Indian Society and certainly lack of awareness too.

Let's understand it with an example. If 100 people in India know about web development then only 20 out of them use their knowledge for doing something creative. And out of those 20, only 5 know both development as well as designing part. [1]

So the conclusion is that a very negligible ratio of total population of India has knowledge of web development. But why, there are many reasons such as lack of resources and awareness. So this research paper is all about the current scenario of web development/blogging in India.

## AN INTERNET SURVEY IN INDIA: THE ANATOMY OF A WEB DEVELOPER

According to a survey that was conducted among 500 professional web developers by **designshack.net**, following result was obtained:

- 78% of web developers are male.



- Average number of services offered to clients are 3.1 that includes website maintenance, website designing and SEO (Search Engine Optimization), promotional page designing.
- 50% of web developers are aged 19-37 years old.
- 80% web designers are freelancers or employed.
- Clients underestimate the cost of web development.
- 60% of web developers consider that demand for mobile sites has increased.

The volume of mobile device based traffic continues to grow every year. According to an analysis, in the first quarter of 2014, mobile traffic is up with about 30% more volume as compared to the same period of last year and is approximately 130% more since the first quarter of year 2012 [3]. Mobile advertising is booming with a great extent. This is pushing up Media and network's demand for responsive websites.

### **MONEY EARNED BY A WEB DEVELOPER IN INDIA**

A web developer in India earns an average salary of ₹ 236,379 per year [4]. Skills that are normally required are HTML, CSS, PHP, MySQL Database Management and server configuration. Skill that is associated with high pay for this job is Java. Experience strongly influences income in this job, but people in this job generally don't have more than 10 years' experience. This scenario doesn't affect the freelancers who have experience since older age than those professions who learned all the things in colleges. Still people in India aren't focusing on web development as compared to foreign countries. In other countries, people get paid less but still they work on these things because of larger number of opportunities. In India, web development is meant to professionals only. Most of the web developers in India are hired by companies as compared to other countries where individual developers/bloggers are maintaining their own blogs or websites and earning money out of them.

### **CHALLENGES FACED BY WEB DEVELOPERS/BLOGGERS**

In today's high-tech world, endless resources are available online. The thing is that people are not ready to utilize them. Anybody can easily set-up a blog, that's not an issue; however, creating a successful blog with a dedicated and huge reader's base is another situation. But at least a free blog also can teach you many things what is needed? Answer: **“Dedication and an Aim”**. Challenge is for those who want to succeed but don't know what to do. Like, developing a website with healthy consistent traffic, loyal readers and the potential for monetization will present the blogger or web developer a fair amount of challenges. While creating a website, web developer mostly encounters a number of trials along the way.

All the web developers are not necessarily be good web designers. Due to which they go into an idealess condition where they know how to arrange bricks but don't know how tall the wall should be. Initial challenge that many web developers/bloggers face is to find a niche for their website .Producing Quality and Unique Content is not that easy. A writing style and a content schedule that will keep readers interested.

One of the major problems that a blogger or web developer faces at the very initial stage is that it takes forever to launch the new site.

Once you decide to create a new website, identify the requirements, sit in front of your laptop, something funny happens. **"Idea... Where should I start from?"** This is what almost every web developer faces at their initial times of web development because maybe they have learnt the coding part but knowledge of designing comes with time. [2]

### **FUTURE OF WEB DEVELOPMENT IN INDIA**

A positive approach takes no longer to grow a tiny seed into a very large tree whose fruits can be enjoyed by whole mankind. The web development industry in India has got colossal foundation and the future of it is shining very brightly in the sky of Information Technology. The journey was started in 1991 when first Indian website was developed that has gone millions of miles ahead. The web development industry is expected to grow over 25% by 2015 in India.[5]The intense ability to achieve and desire to

shine has left the thirsty minds of web developers striving to achieve more. As a very proverb says "When Intelligence couples with determination, always takes an ideology to great heights". It is because of this coupling that has established a base of future of the web development industry in India.

The cost of developing a website has become very cheap. Domains and web hosting at available at a very low price. Web development tools or systems have also grown a lot and available to the public free of charge. A popular example is Word Press, which is usually distributed free of cost. Word Press alone has encouraged many people to set-up new websites and thus contributing to enormously increasing website development popularity. There has been a rise in WYSIWYG (what you see is what you get) web development software's. By using such software's, anyone can develop a webpage in a few minutes. Knowledge of Hypertext Markup language (HTML) has increased professional results.

A fabulous growth is expected in upcoming years. There has been a mind-blowing increase in the extensions of basic web production in the last couple of years. Use of static graphics, animated pictures like animated gif's, video clips and Java applets along with sound production has increasing remarkably. With coming-up of 3D Technology VRML (Virtual Reality Modeling Language), web has become more interesting than never before. Experiencing a virtual world that's a mere reality changes the user's perception of what the web is. With such unique designs and ways to develop a website, each website will be a different virtual world with its own rules.

### **GROWTH OF OFFSHORE INFORMATION TECHNOLOGY: OUTSOURCING IN INDIA**

The major countries that are involved in offshore IT development include China, Philippines, Mexico, Ireland, Malaysia, and Singapore with Vietnam, Russia and Canada eager to seriously enter the Indian market. India remains the clear leader in global IT outsourcing with an increasing supply of English-speaking, Technologically-educated, and Low-cost workers, combined with a rapidly improving telecommunication infrastructure. These factors plus an early adoption of international software quality standards ensures that India will continue to provide increasing outsourcing services for years to come. In an industry well known for cost and defect excess, it is little wonder that India's well-positioned software outsource industry would flourish. Even during the year preceding March 2003, in what were slow business times in the U.S. and amidst unsettling world events, India's primary software development company's saw revenues rise from 12% to 30%.[6] The vast majority of this business was outsourced development work coming from U.S. corporations. These trends indicate that the downturn in the U.S. technology professions may not be as short term as the Labor Department indicates. Many of the jobs being lost in the U.S. may be lost forever with the continuation of outsourcing of high-tech domestic labor to offshore firms.

### **THINKERS PERSPECTIVE**

So far the concepts, facts and current world scenario of Web Development & Designing have been discussed. But when it comes on discussing these things about our nation India, research takes a bit more complicated turn.

What is the goal behind studying? What is the purpose of learning something daily? There are many more questions like these and all of them have the same answer and that is **"To be a resourceful personality for the whole human society"**.

Now when it comes about economic factors of any country online business also considered. This is why emphasizes are put more on the awareness about **Website Designing & Development** and its streams in India. According to an online report, India's e-commerce industry may reach **\$70 billion by 2020**. But the ratio is still very less when this assumption compared with developed countries like **USA and Canada**.

**FACT:** Canada is the top country in the world with most computer literate kids.[7]

Why India fell behind in the world in Web Development and its countless streams when it's already known that the future of this planet is in computer technologies advancement only? The only reason is

lack of awareness.

In our nation the common myth is that a child becomes able to earn money only after completing about **15 years** in schooling than **3-4 years** in **pursuing graduation** then **2-3 extra years** to gain any **professional qualification**. Assume that a child starts his schooling life at the age of **3** then you can see he/she spends about **extra 21 years** to being able to earn money. It means he/she reaches at the age of **26+** and still **no employment guarantee!**

As a very popular proverb says “**Bitter Truths, Dirty Lies**”. So as a consequence of this matter of fact, one can say that it's the truth that even after spending **26+ precious years of life**, there is no surety to get the **desired employment**. It sounds pretty sarcastic but it's only because of the trend that has been followed blindly from a very long time. The **Young guns** of our nation can change the trend. It can be made much easier with little smartness, dedication and most importantly awareness. What if a normal school or college student can make a **5 figures monthly income** with **no extra efforts**? What if a daddy can make an extra income after his **8-5 traditional job** so that he can take his family to a dinner outside sometimes without thinking so much? What if a mommy can make a **handsome amount of money** just by posting small **home tips and recipes**?

Well everything is possible when it comes on internet. It is the only thing in this world that has no limits. If you have even little knowledge of Web Development or interest in it or desire to learn about it then nobody can stop you from making living online out of unlimited dimensions of the **World Wide Web**. Earlier it had been said that “**Time is money**” but according to current scenario it has been rephrased and now it is “**Time & Knowledge both are money**”. Like creating your own website and sharing your knowledge with the world can easily bring **handsome INR to your bank account**.

Many multinational companies now understand the importance of having a professionally developed website. This is what that creates a win-win situation for web developers or aspired bloggers. Multinational companies not necessarily require a person with a degree in one hand knows nothing. They look for talent, a person with zeal in the eyes. That person basically known as Freelancer. Freelancers mostly get hired online because it not only saves times but also proves a better way of work with mutual economic benefits.

## CONCLUSION

Today, India is being viewed as a major IT hub worldwide. As of now, Indian software & web development markets are gaining considerable attention from most foreign companies who wish to outsource their web development requirements. Why? Because Indians are providing world class web development solutions aimed to boost online businesses.

Indian IT industry has already created an impressive online presence for itself and is generating significant revenues in the world market. Thus making it the most preferred choice for web development activities. In recent times, most IT firms in India have proven their capabilities by offering unmatched quality software's and web tools in the global arena.

Looking at current scenario, it can be observed that with the progressing internet, many emerging companies in diverse areas have opened their website development companies. Looking at the overall scenario, if we make a comparison between India and other countries then one can observe that truly India has more number of talented professionals who can deliver far better quality work as compared to any other nation. But what we still need is awareness and most importantly motivation. People should know that having a good knowledge of Web development and utilizing it only for that 8-6 job will be unwilling for the online resource community if you are not making your online presence.

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# SECURITY REQUIREMENTS: NON-REPUDIATION ATTRIBUTES

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## **Abstract**

*Non-Repudiation is an attribute of Security Requirements. By Non-Repudiation an organization that has validated some data, cannot be deny having validate it. Moreover, entry to the public key alone does not authorize an illegal entity or organization to sham a justifiable signature. Basically Non-Repudiation is the guarantee that someone cannot oppose something. Non-Repudiation mentions the potential to assure that an entity to a settlement cannot contradict the originality of their signature on a contract or transferring of the message that they emerged. The validations of Non-repudiation, possessions depend on the confidential key. It is a major detail of the digital signatures. This paper deals with the description of attributes of Non-Repudiation, that is, potentiality of Non-Repudiation architectures, strong authentication mechanism and unique binding between individuals an their OTP tokens and digital signatures, integrity of information, guarantee of non repudiation of submission, achieve non repudiation of receipt, archived and property protected logs, abundance standards and legal binding, efficient specific NR protocols, strong hash functions and private key, validation of origin.*

**Keywords:** - *Non repudiation, Attributes, Potentiality, NR protocols, private keys.*

## **I. INTRODUCTION**

- **Security in Information technology-** It is also known as system security. The security is statistics certainty registered to technology. A computer is any machine having a central processing unit and some of the memory like primary memory and secondary memory. These kinds of machines can vary from simple machines that are not-webbed with different machines [1]. The instance for such case is the calculator. There are also to machines that are webbed to computing machines such as smartphones and tablets etc. The specialist of Information Technology security is virtually inevitably established in any extensive operation required to the creation [1]. They are accountable for possessing all of the automations within the community that is secured.
- **Guarantee to the information-** It is the action of assurance that the data will be secured and it will not lose when the condemning matter originates. Because much information is stored in the computer in today's scenario it is important aspect by which the information technology specialist dealt with.
- **Threats-** The threats of computer system can be seen in many different outlines. The most widespread threats in today's scenario are operating system offense, originality larceny, and theft of mental possessions, apparatus and data theft, obstruct theft, and data exaction theft [2]. Operating system offense is experienced by most persons. These theft includes viruses, phishing attacks etc. Mental possessions have also been a substantial affair for the businesses in the Information Technology sector. It is basically the possession of belongings subsisting of some kind of protection.

## **II. NON-REPUDIATION**

- **Traditional Legal Meaning of "Non-Repudiation"-** There is an interpretational judgment between the contractual uses of the phrase Non-Repudiation. In the fair sense a purported

endorser to a document is always able to revoke a signature that has been associated to individuals. The support for a repudiation of a regular signature may include:

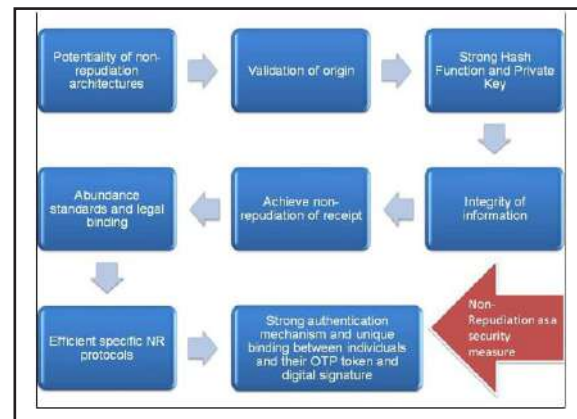
Falsification signature

No falsification signature, but was retrieved through:

- a. Unethical management by organizations to an agreement;
- b. Extortion initiated by a third party;
- c. Unjustifiable impact applied by a third party.

→ There emerges to be an act within the computerized marketing environment to take away these basic authorities that prevail with basic law jurisdictions law. If a person refuses a precise signature then it declines upon the awaiting party to validate that the signature is accurately that of the person validating it.

→ Moreover, the basic law procedures fixed to taken a wrong allegation of non-repudiation is beholding. It simply occurs at the instant when the signature is being fastened. It means, by having an autonomous developed spectator the authorization of a data shortens the capability of the endorser to successfully refuse the signature as a falsification at a next date. It is always unfolded for the endorser to refuse the signature on other premises such as those mentions above.



→ The subject that appears is if a digital signature should be conducted individually to that of a conventional signature. It is acknowledged that the law should not in the computerized marketing environment develop this location as commendations to the constitutional rights of parties to abandon a digital signature. The computerized marketing environment should not have contrasting rules from those refined over many generations in the paper-based environment. These rules have been acknowledged and constitutionally proved so as not to prejudice any party in an enterprise.

### III. ATTRIBUTES OF NON REPUDIATION:-

Since Non repudiation is a major security requirement it is important to know about its attributes. Basically an attribute of non repudiation in cloud computing is the statement that clarifies about the features of an entity. The attributes of Non repudiations are explained in this paper. These are:-

#### A. POTENTIALITY OF NON-REPUDIATION ARCHITECTURES -

Since Non-Repudiation is an emerging technology it is important to know about its attributes. One of the most important aspects of Non-Repudiation is potentiality of its architectures that means how they can be helpful in the field of Information Technology [3].

1. **Architectures:** - The national framework and the rational management of a delineate system.
2. **Framework:** - It is an important auxiliary arrangement or system.
3. **Technical architecture:** - A designation that diagnoses the peripherals and their affiliated performance, depicts the affinity of components, and also depicts the scaling of performance towards components.
4. **Security architectures:** - It is a comprehensive representation of a security environment or security system, on a certain principles to design the system or environment as well as drafting and relevance of outline the security.
5. **Layered security architectures:** - It mentions the abstraction of “Defense in Depth”. It mentions the various girdle of the architecture, enough as in the establishment architecture
6. **Defense in depth:** - Defense in depth is the execution of superimposing contends to reform a management security. It is a dominant security proposition in affirmation to information. It can

be assigned to the super impose in an architecture of security. Confederate organizations inclined to have a superimpose architecture of security, even if it is direct or not. Some of the security architectures are ISO/IEC 27001 and 27002 (assimilate in ITIL and COBIT) and NIST special Publication 800-53 and SABSA. Some of the security procedures are levels, suggestions and policies.

## **B. AUTHENTICATION OF DIGITAL SIGNATURES**

- A digital or electronic signature is arithmetical strategy for exhibiting the originality of the electronic message. A rational signature gives a receiver a basis to trust that the message was generated by familiar sender, so that the sender cannot contradict having sent that message. This is called as the authentication in Non-Repudiation [4].
- These electronic or digital signatures are generally used for the administration of the operating system, and also in the commercial enterprise. Digital Signatures operate a kind of dissymmetric cryptography. For the messages sent through unsecure medium, a premises resolves digital signatures gives the customer logic to admit that the message or document was sent by the solicit sender [4].
- Authentication is one of the applications of digital signatures. Despite, the documents may usually contain information of the article transferring a message, that the information of the entity may not be authentic. Therefore digital signatures can be used to find the authenticity of the signatures. When proprietorship of a digital signature obscure key is constrained to a specific user, an accurate signature gives the report of that message was delivered by that user.

## **C. INTEGRITY OF INFORMATION**

- When the message is transmitted, the sender and receiver must ensure that it has not been reformed. There are possibilities to change an encrypted message even without knowing the contents of the message even if encryption covers the contents of the documents. Despite, the message is electronically signed, if there will be the change in the message after the signatures has done, it abolishes the signatures [5].
- In Information Technology security, virtuality or integrity means sustaining and ensuring the certainty of the reports over its integrated entity. In another words, data or document cannot be altered in an unjustified presence. The systems of Information Technology security give the integrity to the data or message with data confidentiality [5].

## **D. NON REPUDIATION OF RECEIPT**

- Non-Repudiation of emergence connects the professional message and the operator of the message. It provides judicial proves that you have delivered a professional message [6].
- Non-Repudiation of receipt emerges the professional message and the receiver of the message. It provides judiciary proof that you have received a professional message [6].
- To assist Non-Repudiation, the unique engine assimilates the succeeding utilities:
  - Electronic signatures:-An electronic or digital signature is any voltaic means that demonstrate that an individual accepts the subjects of digital or an electronic message.
  - Assured time stamps: - In the Information Technology sector time stamps are useful in some of the directories to carefully hold the enterprise.

## **E. LEGAL BINDINGS IN NON REPUDIATION**

There are many resources that will allow authenticating constitutionally binding records. These records are signed electronically or digitally and it assures that they were not transformed. Constitutional affairs are based on authority. In some of them, a signature (electronic) is legally-binding [7]. The

arrangement used to outcome the signature element not for denominating if the signature authentically binding but examining it. The impersonate endorser will alligate that he didn't do it and at the same time his candidate will be decisive on proving him wrong [7]. Confined in the mechanical particulars of the signature process, experts will then acknowledge the concern of evidence lies on the entity who demands the signature legality, or on a entity who conflict it.

#### **F. EFFICIENT SPECIFIC NR PROTOCOLS**

It deals with the prohibition of a party from discarding compliance. The dominant aim of Non-Repudiation protocols is the effectiveness of the proofs. It must give every associate with authentic proves of the others corporations in a protocol conferences. Another aim of some Non-Repudiation protocols is Fairness: One associate should not control more proofs than the other does. Fairness is almost needed in the enterprise of e-commerce [8]. Fairness may be a fetching characteristic of Non-Repudiation account. Protocols can attain fairness through the crisis of a reliable third party but the expansion of the reliable third party's crisis can differ between protocols.

#### **G. PRIVATE KEYS AND STRONG HASH FUNCTION**

The public key is accessible to everybody. The private key is only accessible to the proprietor and it cannot be copied from the public key. When something is incrustated with the public key then, only the analogous private key can decode it [9]. However, when something is incrustated with private key, then everyone can authenticate it with the analogous public key. The electronic signatures are used to maintain Non-Repudiation. Security is collapsed when the private keys are swiped. Thus, the private keys must be reserved on the smart cards to break the possibility of them being plagiarized [9].

A hash function is any province that plan electronic or digital message of irrational length to electronic message of particular length, with a little alteration in consultation message generating very enormous alterations in making the message.

#### **H. VALIDATION OF ORIGIN IN NON REPUDIATION**

The Non repudiation of origin premises needs a surety that sender sends some specific message or document. Non Repudiation origin must provide the surety that the message sent by the sender must have some specific labels and the receiver must check two messages sent by the sender. The spectator and the other individual or requester must be enumerated in the enterprise of the Non Repudiation protocols [10]. The principle is administer as a result of signature (that can't validate), and the origin of data is administer by the component which gives the significant authentication to validate the signature. If it is validated, then the individual have the personality of the signature composer.

#### **CONCLUSION:-**

Non Repudiation is one of the developing security requirements of cloud computing in the Information Technology field. Non repudiation depends on the acceptance that the endorser only has approached to the private key and passwords. The attributes of Non Repudiation like potentiality of Non Repudiation architectures, Integrity of information, Guarantee of Non repudiation of submission, efficient specific NR protocols, Private keys, validate of origin and many more have been specified in the paper. The binding nature of non repudiation constrained the service of explicit techniques to make sure that the non repudiation protocols are complimentary from inaccuracy or flaws of the security. In future the paper work will be dealing with these attributes with threats where this NR can decrease the threats level of cloud.



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# ICT IMPACTION IN TEACHING AND LEARNING (PERSPECTIVE: SCHOOL EDUCATION IN INDIA)

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## ABSTRACT

*Research in ICT reveals the realization of educational importance within its versatile area/s. The prior research has depicted that ICT has done the fundamental changes in practices and procedures in all the area/s of industry and governance. The recent Higher Education is a very communally oriented societal action for India. The increasing degree of inter-relationship between the learners and teachers has built the quality of education traditionally. This paper provides an analysis of the relevant literature that aims to prevent the perceived barriers to technology integration in education. The commencement of ICTs in the higher education has deep impact on entire education system ranging from investment to implementation of technologies in dealing with key issues of present scenario. The paper focuses on the challenges posed by integration of ICT in various aspects of higher education. The use of ICT in education makes it more learner-centered learning settings, which creates more burdens of technological work and anxiety for teachers and students. Still the world moving speedily into digital media and information, the liability of ICT in education is becoming furthermore vital and this significance will maintain to cultivate and build up in the 21st century. Therefore the paper depicts that ICT in higher education is not only a process for educational development but also a way of socio-economic development of the nation.*

**Keywords:** *ICT, Information and communication technologies, Education, Indian Education*

## I. INTRODUCTION

Globalization and technological revolutionize processes have accelerated in over the past years have developed a new global economy power-driven by technology, processed by information and motivated by knowledge [1]. With the passing time the half life of information is continuously reducing and access to information is continuously growing exponentially, schools cannot stay simple venues for the spread of a lay down set of information from instructor to learner over a set period of time [2].

In such connection, Information and communication technologies (ICT) which include radio and TV, and the Internet world have show off as potentially and powerful enabling tools for educational transform and reform [3]. When used appropriately, different ICT are used to increase access to education, reinforce the relevance of education to the gradually more digital workplace, and hoist educational value by helping teaching and learning into an engaging, active process linked to real life [4].

The concept of moving the traditional classroom of tables, notebooks, pencils and blackboard to an online forum of computers, software, and the Internet world restrains many teachers who are accustomed to the face-to-face interaction of the traditional schoolroom. In the prior research, online instruction has become tremendously popular as is evident in the rise of online universities [5].

Information and Communications Technologies (ICT) education is basically our society's effort to teach its current and rising citizens valuable information and skills around computing and communications procedures, software that operates them, applications that run on them and systems that are built with them [6].

It can also be defined as a varied range of technical equipment and resources that can be used to correspond, and to create, circulate, store, and manage information. These technologies include

personal computers, the Internet world, broadcasting technologies tools (radio and television), and telephony. In this module we will get an overall idea about the concept of ICT. The paper aims to discuss about the need & significance of ICT in Education [8].

## II. ICT IN EDUCATION

ICT increases the suppleness of delivery of education so that the knowledge is accessible to the learners anytime and from wherever It can sway the way students are being trained and how they gain knowledge of ,as at the present the processes are student focused and not by teachers. Information and communication technology (ICT) in education, and learning technology, is the study and moral practice of providing an improved learning routine by creating, managing suitable technical processes and resources [9].

Educational technology is used by students and teachers in homes, schools and by industrialists as well. The educational technology includes both material objects, such as equipment and networking hardware, as well as theories such as training and learning theory [10]. Educational technology is an integral part of our Indian society today. Information and communication technology in education can also be referred as a set of tools and principles which have an effective application in learning. Educational technology depends on a broad description of methodologies and techniques, and skills assessments [11].

Examples of these two extent are material aspects such as internet-based learning, and educational psychology aspects such as instructional theory, learning theory, media psychology and human presentation technology fields of study that apply theories of human deeds to educational technology [12].

Educational "technology" may be referred to all valid and dependable useful education science, such as tools, and the processes and measures that are imitative from scientific research. As such, educational technology in a given situation may refer to an imaginary process, and does not essentially imply physical technology [13].

This vocabulary is consistent with educational technology as "the learning and ethical practice of facilitating learning and recuperating performance by creating, using and overseeing fitting technological processes and resources and the definition by the Association for Educational Communications and Technology (AECT), which denoted instructional technology as "the premise and exercise of plan, expansion ,operation, managing, and valuation of processes and possessions for learning." [16]

Educational technology thus refers to the use of both physical hardware and educational theoretic. Several domains are enclosed within which includes learning theory, computer-based training, online learning, and, where mobile technologies are used, m-learning. Consequently, there are numerous discrete aspects relating to the logical and technical growth of educational technology.

## III. HISTORY

The history of ICT is derived from modest beginnings, which includes the abacus. The abacus is thought to have been initially made-up 3000 years before the birth of Christ. Revisions to its use/design continued for many years e.g. 500 BC a bead and wire version is developed in Egypt [17].

To go back in time, the first mercantile computer was launched only 60 years ago and the first microcomputers appeared in schools about 30 years later. Schools up to that time could mostly be described as conventional, having changed little from the learning institutions of 100 years or so previously. But these initial microcomputers were beginning to bring about gradual change in classrooms as recorded in a UNESCO publication, *Developing Computer Use in Education* (1986)[17].

Since the early 1990s, schools have been on the frontline of the ICT revolution. The new technologies of the digital age have presented school systems and educators with a perplexing mix of promise and problem. ICT promotes a great hope for new education, a great liberator, and the common currency of the 'knowledge age'. The authenticity has not fairly matched up. ICT has also shaped the greatest frustrations and the greatest disappointments as a teaching and learning tool-system. [17].

This time may be measured as a baseline; the use of ICT in schools, termed the budding step. To leap to the present, we see today the involving of computers across the world. The year 1996 can be considered as the year in which the Internet made its early far-reaching impact, on education institutions and on the rest of human activity. [17]

Today's web of computers and what we call ICT (Information and Communication Technologies) have since proliferated to such a degree that they blow on virtually every aspect of our everyday life. Our schools and instructor education institutions and the environment of learning and teaching are witnessing a paradigm move brought about by the use of ICT. [17].

#### IV. BENEFITS OF ICT

ICTs are a prospectively prevailing tool for developing educational opportunities, both prescribed and non-prescribed. ICTs are a potentially influential instrument for extending educational opportunities, both formal and non-formal, to earlier underserved constituencies—spread and rural populations, groups traditionally barred from education due to edifying or communal reasons such as racial minorities, girls and women, persons with impairment, and the aged, as well as all others who for reasons of charge or because of time constraints are not able to move on campus [15].

##### Benefits

- With the use of ITC, productivity has increased the educational activities. Education is capable of producing the same standard of assignments over and over again, which has reduced human error. Technology has replaced human tasks, and as well as provided security to the organizations.
- All the way through new technology such as electronic message and video-conferencing the communication within an education and also to the external entities such as parents, students etc has improved. Communication between twigs or even between countries will be enhanced.
- Students use the Internet to research information, which also helps for their homework and which means that they are reaching an array of information. ICT helps students to work more precisely as it will let know them if they have made an error.
- The use computers in ICT which can stores more information in a less space; this saves an ample of space for other work and doesn't acquire up a large amount room as they won't have filling cabinets filled with everyone's information. Work becomes much easier to study, as it is much neat with the use of pictures, which make the work look more professional.
- India has more than a billion populations with a high ratio of the young so it has a large prescribed education construction. The importance of education in budding countries like India is very high as education is still considered as an important bridge of social, financial and political mobility. There exist many physical barriers, socio-economic barriers, and linguistic barriers in India for people who wish to access education which need to be defeated.
- ICT has the prospective to get rid of the difficulties that are causing the problems of near to the ground rate of education in any country. It can be used as a way for overcoming the issues of expenditure, fewer number of teachers, and poor quality of education as well as to defeat time and distance barriers
- One of the most vital donations of ICT in the field of education is- Easy Access to Learning. With the help of ICT e-books, sample examination papers, previous year papers etc are catered to the students and they can also have an easy way in to resource persons, mentors, experts, researchers, professionals, and peers-all over the world. This suppleness has finely tuned the availability of just-in-time learning and provided learning opportunities for many new learners who earlier were embarrassed by other commitments
- In order to promote improved teaching wider accessibility of finest practices and best course material in education is pooled by means of ICT. ICT also allows the academic institutions to reach deprived groups and new global instructive markets.
- As well as teachers are also finding the potency of teaching at any time to be opportunistic and able to be used to benefit. Mobile technologies and flawless communications technologies

support 24x7 teaching and learning. People have way in to information via ICT to keep velocity with the latest developments.

- ICT can be worn to get rid of communication difficulties such as that of space and time. ICTs also allow for the formation of digital resources like digital libraries where the students, teachers and professionals can access research material and course material from any place at any time. ICT provides new educational approaches. It can provide quick distribution of education to target deprived groups.
- ICT enhances the global dimension of educational services. It can also be used for conducting health campaigns and literacy campaigns. Use of ICT in education helps in developing advanced level skills, removing time and place barriers and solving complex real world problems. It improves the awareness and understanding of the world of the student.
- It can be used to arrange the workforce for the information society and the new global economy state that the experience of many teachers, who are early innovators, is that the use of ICT is motivating for the students as well as for the teachers themselves.
- It also upgrades the excellence of education by facilitating learning by doing, valid discussion, delayed time conversation, directed teaching self-learning, problem solving, information gathering and analysis, and crucial assessment, as well as the capability to exchange a few words, team up and learn.

#### **V. ISSUES AND CHALLENGES OF ICT IN EDUCATION SYSTEM**

- The initial cost of buying fresh apparatus is normally high-priced, as well as repairs costs. Employee's drive may suffer if part of their job is replaced by ICT. This de-skilling of their job may make employees feel that they are at risk to being made out of work. Machinery and equipment may undergo breakdowns which will affect production. The introduction of new technology may make the employees feel threatened or might not desire to learn something new. This can create anxiety. This will also create some training issues which need to be considered.
- Students just duplicate information from Internet and this means that they are not in reality learning anything because they are just copying. Everyone needs to be taught to use ICT. ICT can be very costly to begin. Communication through voice chat or instant messaging does not take body language into account. Non-verbal communication plays a vital role.
- ICT provides a series of ways for fraudsters to get access to your personal information, which could result in you or your business losing funds and status. Technologies such as online banking mean that with the right security information a third party could imitate you and gain access to your funds distantly. In contrast to the pre-ICT era, when a hoax would influence another person (for example, a bank teller or phone operator) that they were in charge to way in your money.

#### **VI. INFORMATION & COMMUNICATION TECHNOLOGY CAREERS**

The Information and Communication Technology (ICT) Industry is one of the fastest growing and changing fields. Technology is budding rapidly and new policy and systems are constantly being formed to provide faster and well-organized methods for information and communication technology. Careers in the ICT field are in high command and the industry is likely to grow. Professionals in ICT careers may work in industrial service sectors and ICT companies.

Careers in information and communication technology fields include a diversity of roles and tasks correlated with scheduling, analyzing, installing and supervising the presentation of ICT systems and transmissions. ICT support technicians aid with planning and installing ICT hardware and systems and mend any repair or defects. Sales professionals in the ICT industry provide information and sell ICT hardware, systems and forces on behalf of ICT companies. Training programs are developed by ICT trainers and user guides to help customers and patrons to operate systems. ICT business and systems analysts assess and develop technology systems to facilitate businesses run at best possible standards and ICT managers direct and supervise the operations and facilitation of ICT services in

companies and organizations.

ICT professionals should have technical proficiency in computer systems, hardware and networks, and should have extraordinary problem solving and analytical abilities to identify and repair defects or malfunctions in the arrangement. Those working in the ICT field should have natural awareness and capabilities with ICT programs and information computer systems. They should be able to take hold of large amounts of information and be able to speedily learn and become accustomed to new technologies and advances in the field. Individuals wanting to get into the field should complete a Bachelors degree in related ICT studies and gain hands-on experience.

## VII. CONCLUSION

One reason many kids are turned off by ICT field is their teachers do not have an understanding, are not at ease with or do not have such great interest in this field. We need to develop such teachers who are proficient with ICT and have an ease to use it. Their modeling and interest is a major factor on student decisions about what they like and want to chase. Diffusion of ICTs in Indian universities and colleges would respond to the twenty-first century demands. Application of ICTs in managing higher education institutions and use of the technology to homogenize quality of education in the highly diverse scenario across the colleges and universities established in the country would benefit many students. Counsellor Assistance for ICT: Many student and college counsellors are baffled by ICT and do not know how to guide students about ICT in the best possible way. Fair enough. ICT is puzzling We can do a better job teaching counsellors about ICT and ICT educational and career pathways, and we can give them tools to advance their ICT related counselling efforts. ICT Curriculum and Resource Development: It is not easy to build up and put across flourishing ICT courses and modules in schools. We could aid by producing and training teachers to convey those resources - and giving or loaning them equipment needed to give students real experiences with ICT technologies.

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# CLLOUD EDUCATION IN INDIA: LOW RATE ADOPTION

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## ABSTRACT

*Education today is becoming completely associated with the Information Technology on the content delivery, communication and collaboration. The need for servers, storage and software are highly demanding in the universities, colleges and schools. Cloud Computing is an Internet based computing, whereby shared resources, software and information, are provided to computers and devices on-demand, like the electricity grid. Currently, IaaS (Infrastructure as a Service), PaaS (Platform as a Service) and SaaS (Software as a Service) are used as education model for Cloud Computing. The paper also introduces the advantages of cloud education, the problems being faced by India in adopting of cloud education and security as a big threat in cloud adoption in education. In this paper we also review the strategy that the educational institutions can use to implementation or increase the use of cloud education among the students and the teachers.*

**Keywords:** *Cloud Computing, Cloud, Cloud Education, Education*

## I. INTRODUCTION

- The students are demanding more technology services from their schools. It's important not only to keep pace with their evolving needs, but also to prepare them for the demands of the workplace tomorrow. [1]The education industry in India has developed significantly over the last decade. At present the higher education system comprises of about 700 universities and over 35,500 colleges.[2]Places such as Bangalore, Pune, Delhi and Mumbai are favoured for higher education in India.[2]
- The education system in India centres mainly on books, exams, marks and grades, whereas the creative learning lies far miles away. Students are taught the part that is within the syllabus which lacks practical knowledge. Technology can be used as principal means in this circumstances. Now-a-days for improved teaching and better understanding many schools and colleges have provided the internet facility and even power-point presentation are being used for teaching. Because of the costly education facilities in India there are many children who are still away from the basic education.
- So how can technology be helpful in removing illiteracy in India? Cloud computing can be beneficial in emerging scenario. Any file or any document or even videos can be accessed from any part of the world through cloud computing which helps to provide those students who are not capable of handling the expense of the education. Using the cloud computing, we can provide easy and creative learning experience to the people from rural areas and make the country more educated, that's why cloud computing technology is used worldwide.

## II. CLOUD COMPUTING



Cloud computing provides computing services on the internet. Individuals and businesses are provided with services by cloud that allow them to use software and hardware that are managed by third parties at far-off locations. Services provided by cloud are online file storage, social networking sites, webmail and online business applications. Information and computer resources can be accessed from anywhere where network connection is available through cloud computing model. Data storage space, networks, computer processing power and specialized corporate and user applications are some of the collective resources provided by cloud computing. [3]

**Various types of services provided by Cloud are:**

### 1. Infrastructure as a Service (IAAS):

In the IAAS the computers that are physical or virtual machines and many other resources are being provided by cloud operating system images and application software is being installed on the cloud infrastructure to make the application work. The responsibility of the cloud user in this model is to patch and maintain the operating system and the application software. [4]

### 2. Software as a Service (SAAS):

The platform for operating the application software and database is being provided by the cloud. Therefore, there is no need of installing and operating the application on the cloud user's computers. Examples of SAAS include: Google Apps, Microsoft Office 365, Petro soft, Onlive, GT Nexus, Marketo, Casengo, Trade Card, Sales force and Callidus Cloud.[4]

### 3. Platform as a Service (PAAS):

In the PAAS the cloud provides the platform for developing the applications. Any developer can develop and run their program on the cloud. Example AWS Elastic Beanstalk, CloudFoundry, Heroku, Force.com, Engine Yard, Mendix, Open Shift. [4]

## III. ADVANTAGES OF CLOUD EDUCATION

### 1. BENEFITS OF BETTER SERVICES[10]:

- a) **Elasticity of service:** Within one go data can be stored by many students and teachers and with no limitation of space capacity of user's to store data increases to a large extent.
- b) **Quality of service:** the most important feature is service quality and in cases where precise requirements have to be satisfied by the outsourced resources and outsourced services.
- c) **Availability:** in the cloud education the most desired feature is availability of services.

### 2. ECONOMIC AND TECHNICAL BENEFITS FROM EDUCATION CLOUD:

- a) **Diminution of cost:** Cloud system that we are proposing is friendly to our pockets and it will reduce the cost by allowing us the facility of Pay per use. That is we have to pay only for the resources which we are using and thus it does not put any financial burden on any of the institute, government or student.
- b) **Focus on education only:** Schools and governments are now free to focus on their goals that is making more research facilities available to the students and making the environment global in spite wasting time on worrying about the buildings, labs, teachers etc.
- c) **Going Green:** Education cloud will surely reduce the carbon footprint.
- d) **User friendly:** This new facility is user friendly and no need to worry about the complexity. It is easy to understand and easy to operate.
- e) **Free from boundation of locations:** From anywhere a teacher can login and take the lecture. Anywhere a student can login the check his grades, submit assignments etc.
- f) **Management of data:** A large amount of data is generated by each school and thus to maintain them effectively and to use it appropriately when needed is the best feature of the education cloud.

## IV. PROBLEMS BEING FACED BY INDIA IN ADOPTING OF CLOUD EDUCATION

1. The maintenance cost is high as compared to the primary cost of the system. Due to the traditional methods Indian education has been following and Indian mentality also plays as a disadvantage due to which cloud education is not being adopted in India.[5]

2. Cloud structure is not supported by all applications.[5]Due to uncertainty of service provider having a station the internet speed is low in rural areas. Thus, the system doesn't work effectively. Internet plays a huge role in cloud education as all the files are being stored and accessed through the internet and if there is a problem in internet then the system is not effective.[5]
3. As we spoke above about the internet problem being faced in India there is another gigantic problem being faced in India which is electricity. Lack of electricity is the foremost problem in the rural areas. Due the power cuts the whole system will go offline and with no electricity this all system means of no use. Thus electricity is a major problem in adoption of cloud education in India.[5]
4. Bandwidth to the cloud service may be an issue for distance learning programs and students logging into university services from home. This expanding cost of education has led to the reduction of teaching staff and increasing the class size. Due to this there is a shortage of qualified teachers in the country.[6]
5. Teachers and educational institutions have not been technology knowledge; hence the adoption of new technologies has been slow.[6]
6. Everybody wants to be secure and protected now-a-days. Security is considered a valuable point in cloud education. But an important issue which has to consider is the security of cloud. Outsiders can easily attack a less secured cloud. So the files being shared on the cloud cannot be secured and many important files can be accessed if the cloud is not that secure. Thus security is a big issue in cloud education.[5]

## V. SECURITY AS A BIG THREAT IN CLOUD ADOPTION IN EDUCATION

1. **Data Breaches:** An event which involves illegal screening, access or recovery of information by an entity, application or service. Security is basically designed to steal and/or distribute data to an unsecured or prohibited location.  
A data breach is also known as a data spill or data leak.[8]
2. **Data Loss:** Accidental deletion of data happens very often without the knowledge of people. When the data is lost the biggest problem being faced by people is recovering it. The data lost may be very important considered too many people and it might create an issue. this might create a problem for people who need data urgently.[8]
3. **Account or Service Hacking:** Cyber-attacks have become very common and dangerous day by day. Thus data stored on the internet is not secure. As we know cloud has been provided with security measures but as the technology has increased or innovative the cyber-attacks or cybercrimes have also increased. Thus when you store the data on internet there's a risk of cyber-attack. Thus there's a lot of risk on cloud where there is a lot of data is stored.[8]
4. **Shared access:** One of the views of public cloud computing is multi-tenancy i.e., Separate customers share the same computing resources: CPU, storage, memory, namespace, and physical building.[9]
5. **Virtual exploits:** Cloud provider is a huge user of virtualization which holds every risk posed by physical machines, plus its own unique threats, including exploits that target the virtual server hosts and the guests. There are four types of virtual exploit risks: server host, guest to guest, host to guest, and guest to host.[9]
6. **Authentication, authorization, and access control:** Cloud vendor's choice of authentication, authorization, and access control mechanisms is critical, but a lot depends on process as well. For example: Shared namespaces and authentication to create single-sign-on (SSO) experiences are great for productivity, but substantially increase risk.[9]
7. **Availability:** A customer of a public cloud provider, redundancy and fault tolerance are not under your control. Every cloud service claims to have strange fault tolerance and availability.[9]
8. **Ownership:** This risk comes as a surprise to many cloud customers, but often the customer is

not the only owner of the data. Many public cloud providers, including the largest and best known, have clauses in their contracts that explicitly states that the data stored is the provider's - not the customer's.[9]

## **VI. STRATEGY ABOUT IMPLEMENTATION OF PROPOSED SYSTEM**

1. This concept is entire new and thus it is necessary for the teachers first to understand it. When the teachers understand it then they can easily explain it to students and parents very easily.
2. Many places are there in India in which computer is a big machine. There we can hardly find any computer expert and thus we have to arrange a one well versed engineer for here. Similarly we have to check the internet availability, speed of the internet etc. Thus if there are facilities then well and good else we have to upgrade them.
3. Now this is the major step in which we will run our proposed system and check the results and cover all the errors and finally recheck it again and again

## **CONCLUSION**

We conclude that cloud computing have many advantages and disadvantage spite of that by trying to overcome with these problems and try to help any stream students to be updated by the recent technology and to enhance its knowledge that can be accessed anytime, anywhere, from any device. By helping countries worldwide lower the cost and simplify the delivery of educational services. Cloud computing allows students across the globe to gain the knowledge, skills and training which they need and get succeed in the global information society.

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# EFFECTS OF SOCIAL MEDIA ON OUR LIVES

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## ABSTRACT

*Social Media, one of the most trending topics of this time. Today, the Social Media is not what their creators and developers imagined at initial stage. A concerning change has been observed in the effects of social media over the last few years. As being a part of change, our communication habits are changing too. More or less, results may be awful for mental health and real world social life. If we talk about past then communication at that time used to be simple and meaningful. Before that magical power known as "Internet" came into existence, there were limited information sources. They were Newspapers, Telegrams, and Radio etc. However, today's reality is totally different. Last few years of internet have exploded into a limit-breaking way of mass socialization amongst users. With the help of sites like Facebook, Twitter, Tumblr, and LinkedIn, people are getting more and more close to their family, friends and relatives. These social networks have become second by second communication necessities for a huge part of total world population.*

*So our this paper mainly focuses on Social Media and its impact over people in last couple of years in both good and bad way.*

**KEYWORDS:** *Social Media, Effects, Human Health, Mental Health, Social Circle*

## INTRODUCTION

Social Media or Social Networks are a computer-mediated tool that helps the user to construct distribute or trade information, data, pictures and videos with their virtual communities and networks. In other terms, it is a group of Internet based applications that permit the formation and switch of user-generated content.

It is the channel through which people exchange information. Social media is the way we get many updates from people in our circle. It is possible to find a number of different social media outlets available today, and one should certainly be able to find something that suits their needs and lifestyle. From Twitter to Facebook and Google+, something is available for everyone who wants to connect. There are so many social media platforms; it's hard to keep count. Use of social media has exploded in the past decade, providing a quick and easy way for us to communicate better with one another. The technology has changed people's habits, expectations, and lifestyles.

Nowadays, social media seems like a big part of our life. When your friends didn't reply to your text, you can greet them on Facebook. When you want to listen to music or see a music video from your favourite singer – go to YouTube. When you just wake up and open your eyes, you don't have to walk outside to get the newspaper, just take your phone and scroll your Twitter timeline then you'll get the information.

Blog and Forum are also types of social media because they allow to share “what you think” about articles, pictures, videos and so on. There is social media which allows the users not only to share about their profession, major of study, works and company, addresses, political views and religion, but also allow them to find a job and allow the company to find the employees. Everything looks and feels easier to do with social media.

## **EFFECTS OF SOCIAL MEDIA ON YOUTH**

Technology such as social media websites have become prominent parts of life for many young people. Social media tools are woven into many young people's day-to-day lives. Young people are in conversation and communication with their peer groups using a wide variety of different media and media devices every day.

10 years ago, young people may have only been in touch with friends and peer-groups when hanging out at school, or meeting up in town. Now young people can be touch through instant messaging, social networks, online games and many other tools. Young people are growing up in a constantly connected society.

It is clear that social media has become an integral part of people's lives and the thing that their life revolves around it. We will usually find youngsters on smart phones every two minutes looking for the newest Tweet or status updates from friends. We find that being "Facebook official" brings validity to things in their lives.

Social media is a raised area which encourages youngsters to trade their point of view. Since many citizens post and share the contentious present affairs, and so they get to know about the current happening, make comments and share it among friends. Therefore, information is reach to a large number of people in very less time as compared with traditional media. This is the power of social media. Not just that only youngsters can obtain information faster and easier, they can take of the conversation. It is not anymore a one way media.

Social media sites such as Facebook and MySpace are also very useful for professionals, both helping in marketing of small business owners and also aids in fining business opportunities, these sites can also be used for network professionally. [1]

Social media sites allow teens to accomplish online many of the tasks that are important to them offline: staying connected with friends and family, making new friends, sharing pictures, and exchanging ideas. Social media participation also can offer them deeper benefits that extend into their view of self, community, and the world.

Social Media can sometimes seem like just a new set of cool tools for involving young people. Sites such as Facebook, Twitter, and MySpace are bought into play that have numerous positive aspects but likewise have as many dangers that come with the use of it. In general there are various risks concerned with the social media. One of the risks which mainly occur on social media sites is cyber bullying; over the internet, on sites such as Facebook. Cyber bullying mainly deals with the use of electronic communication to bully a person, usually by sending messages of a daunting or threatening nature.

Another terrifying fact about young people and the internet is that they are too open and public with private information. Most of the youth neglect the "privacy policies" of the social media sites and are naive that their information is at risk of revelation to third parties like advertisers. When teens, young adults, and anybody else pass over all disclaimers and policies it opens them up to having their personal information divulged. This is a serious issue due to the increasing rates of cyber crimes like identity theft. There's not much you can do to make it better once you're a victim of identity theft or even a computer virus.

Twenty-one percent of teens say it is safe to post personal information, including photos, online to a public profile. Teens appear to be less worried about posting information about their selves rather than about talking to people they don't know online.

## **ADVANTAGES OF SOCIAL MEDIA**

### **Professional Networking**

Social networking sites allow professionals and academics to create networks of people who are compatible. Academics come across other scholars to allocate research or notes, or simply to talk to and "get their name out there." Professionals find communal friends and potential clients, employers, or business partners. Social networking lengthens the horizons of what sort of connections people can make in their professional lives.

### **Staying Informed About the World**

Social networking sites also facilitate people to share what interests them, such as news on current events so that those who share those interests or just want to stay informed, can examine these stories and share them as well. Ultimately, these stories make their way to users who may have never read them. Since stories are shared all the way through "word of mouth," minor news outlets such as blogs can get coverage, and social network users are overall connected to a larger pool of new information and opinion.

#### **Real-Time Information Sharing**

Many social networking sites have as a feature of instant messaging by the means of which you can exchange information in real-time via a chat. This is an immense element for teachers to facilitate classroom discussions which reduces the burden of students of taking out six library books at a time. Much of what they need to be familiar with they can locate online.[2]

#### **Free Advertising**

Whether there are non-profit organizations that require getting the word out about their forthcoming fundraiser or a business owner promoting a new product or service, there's no enhanced way to get the message in front of millions of people 24/7. The most excellent part is that the word can be spread to a mass audience through social networking profiles for free.

#### **Increased News Cycle Speed**

The speed of the news cycle has been revolutionized by social networking. Various news organizations in order to accumulate or distribute information associate with social networking sites like Twitter, YouTube, and Facebook. Just by watching trending topics from several of these sites one can get aware of what is going on in the world which leads to the expansion of a near immediate news cycle as millions of social networking updates swiftly and spread news and information.

### **DISADVANTAGES OF SOCIAL MEDIA**

#### **Face to Face Connections are endangered**

Social communities have a huge side effect that is also a big disadvantage of social networking: they decrease or eradicate face-to-face socialization. This is mainly because of the sovereignty afforded by the virtual world through which any individual is free to craft a fantasy persona and can impersonate to be someone else. It is hard to say no, to be rude, or to ignore someone when you are looking them in the eye. On the contrary it's extremely easy and quick to unfriendly or unfollow someone and block their efforts to build a connection.

#### **Cyber bullying and Crimes against Children**

Harassment or inappropriate contact from others exposes individuals by the use of social networks. Children could be exposed to pornography or other inappropriate content unless parents are not paying special attention to filter the Internet content, to which their families are exposed.[5]

#### **Risks of Fraud or Identity Theft**

The information posted on the Internet is accessible to more or less to anyone who is knowledgeable in an adequate amount of to access it whether one likes it or not. To make a person's life nightmare most thieves require just a few essential pieces of personal information and they are successful to steal someone's identity which could cost one extremely. A report on CNET reveals over 24 million Americans put their personal information at risk by posting it on public sites such as social communities.

#### **Time Waster**

Social networking sucks 17 percent of our Internet time which can be a big waste of time. While it is factual that some of that time is likely to spent in creation and maintaining significant business, social or professional connections, it is also true that it is simple to become sidetracked and end up spending important time on games, chats or other non-related activities.[3]

## Corporate Invasion of Privacy

Major corporations may attack your confidentiality and misuse your private information through Social networking. On social networking sites, the website aren't the product, its users are. These sites run algorithms that search for keywords, web browsing habits, and other data stored on your computer or social networking profile and provide you with advertisements targeted specifically to you. At the same time, you may be giving the site permission to share your information with outside sources unless you specifically generate settings that disallow them to do so. Participating in applications like Farmville may also be allowing outside vendors access to your private information.

## CONCLUSION

In recent years, social media has become ubiquitous and important for social networking and content sharing. And yet, the content that is generated from these websites remains largely untapped. In this paper, we demonstrate how social media content can be used to predict real-world outcomes. In particular, we use the chatter from Twitter.com to forecast box-office revenues for movies. We show that a simple model built from the rate at which tweets are created about particular topics can outperform market-based predictors. We further demonstrate how sentiments extracted from Twitter can be utilized to improve the forecasting power of social media.

Like anything else, there are always proponents and opponents of any new technology. Hence social media also has both advantages and disadvantages depending on how one uses it. In the way our world is progressing and constantly evolving, it's almost like a time capsule we're preserving for future generations to look back and study upon.

Social media is a great tool and is remarkable in how we can connect so easily and conveniently in the virtual moment we need to with the potential for greater cultural awareness, greater potential for networking contacts and connecting with resources, almost instantaneous communication. Yet as I'm growing older, I'm realizing how much the online interactive technology is really taking away from us and our time in the real world.

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# NON- REPUDIATION — AN EMERGING SECURITY REQUIREMENT OF CLOUD COMPUTING

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## ABSTRACT

*Today Cloud Computing is the most talked about topic of Information Technology. Cloud has the power to transform the way we use technology. But for technology to be accepted by users, it must be secure. At present, security is an essential quality aspect as well as imperative demand in the IT industry. In today's world security threats are generated as soon as a technology comes in market. Similar is the case with Cloud Computing. For countering these threats security requirements originate.*

*In this paper we have discussed the security requirements of Cloud Computing— what they are and how they can be achieved. Among all the security requirements the main focus is on the emerging security requirement— Non-Repudiation.*

**Keywords:** *Cloud Computing, Security, Security Requirement, Non-Repudiation.*

## 1. INTRODUCTION

Cloud Computing has lead to a revolutionary change in Computer Science and is viewed as the future of IT industry. Cloud allows centralized data storage, disaster recovery of data, which exempts the need of installing software separately on each device as each of the connected device uses the software installed on the central computer/server.

Despite of all the work being done to promote cloud, customers still don't readily agree to deploy their business in the cloud. Security issues in Cloud Computing are one of the key factors responsible for slowing down the acceptance. The greatest challenging issue of Cloud Computing is Security which is slowed down the adoption rate.[1]

Cloud Computing requires a major reassessment of security and risk. Inside the cloud, it is difficult to physically locate where data are stored. Security processes that were once visible are now concealed behind layers of abstraction.[1] This lack of visibility can create a number of security and compliance issues. Computer security is not just limited to computer systems but has many links that include the people and the physical security of the system as well. Bribing an insider is the one of the easiest way to break into the system.

Since the arrival of the internet computer security has become much more difficult than it used to be.[2] In the bygone times there used to be not more than a few dozen users, all members generally belonged to the same organization. Programs used to be written in-house or by some vendors. Tapes or disks were used to move information from one computer to other. But today half a billion people across the globe are on the internet. This puts up a huge set of new problems like anyone on the internet can take a poke at our system without our knowledge, infections can spread from one computer to other via the network etc. Security is expensive to set up and a nuisance to run, so most people despite being aware of the need for security try to get away with the least of it i.e. they have the theoretical knowledge but don't implement it in practical.[2]

Even after so many years of work on computer security almost all the computer systems in service are extremely vulnerable to attack. Be it attack on the powerful NASA computers in 2011[3] or the recent cyber intrusion at one of the biggest American banks JP Morgan Chase in 2014 [4], computer security breaches have become a very common phenomenon. To counter these threats security requirements are generated.



In this paper we specifically deal with security requirements related to Cloud Computing.

## **2. SECURITY REQUIREMENTS OF CLOUD COMPUTING**

Cloud computing came into existing in 2008.[5] Since then it has been an area of active research. The recent increased use of cloud and its services has made security requirements and its solutions necessary.

The basis for the security requirements is to achieve protection goal. These goals must be met by the cloud service provider and thus by the cloud service as well. The most sought after protection goals are:-

### **1.1 CIA triad (Confidentiality, Integrity, Availability)**

#### **2.1.1 Confidentiality**

A system is said to be confidential if it prevents unauthorized gathering of data/information. In a data secure system confidentiality is maintained by authorization checks which ensure that information is not accessed by persons who do not have the matching rights. This includes access to stored information accredited by users and data sent via a network. [6]

Cryptographic techniques and access controls based on robust authentication are generally used to maintain confidentiality.[7] Susceptible information should be encrypted, at both occasions – when it is stored on any medium as well as when the data is being transferred across a network. For instance, between storage and processing, or between the provider's system and a consumer user's system.[8]

#### **2.1.2 Integrity**

A system entrusts data integrity if it is impossible for persons to manipulate the secured data without being noticed or in an unauthorized manner. Information that is stored on virtual hard disk must be secured from illegitimate manipulation either by any other participating systems used to process the information or by external attackers.[6] Flaws in the configuration of a cloud provider's systems can lead to violation of integrity.

Thus the information in a Cloud Computing system should always be made available with a cryptographic checksum. The original checksum can be stored on a dependable third-party computer system for testing purposes. Integrity of data can also be approved by using techniques such as message digests or secure hash algorithms, allied to data duplication, redundancy and backups. [6]

#### **2.1.3 Availability**

High-availability is the ultimate holy grail of the cloud. Availability exemplifies the idea of access to services, tools and data anywhere and anytime.[9] It is this concept that has enabled the visions of a future with no physical offices for companies or of completely integrated and unified IT systems for global companies.

Availability is also associated to reliability: a service that is on 24x7 but goes constantly offline is of no good. Traditionally public cloud availability provides “Triple Nines,” or 99.9% availability, which is equal to nearly nine hours of suspension per year.[9]

Many different customers might be accessing the same back-end application(s), making sure that many instances of the same application are conveyed in a scalable manner depends upon load balancing and also to a certain extent on server virtualization. Each solicitation for resource must be probed using any number of metrics and then routed to the best available server.[10]

## **2.2 Authenticity**

A subject or object is said to be authentic if it has the characteristics of genuineness and credibility. [8] These can be established on grounds of its unique identity and characteristic features. An authentic information is one which is reliably assigned to the sender and has not been manipulated since it was generated and distributed. The mechanism for authenticity must ensure that any of participant of the system cannot generate or distribute messages or/and data on another subject's behalf.[8]

Authenticity in a Cloud Computing system can be verified by digital signatures, passwords, or security tokens, which allow the signatory of a message to be identified. [8]

### 2.3 Intrusion Detection

An intrusion is an attack that exploits a security flaw and is followed by a breach which violates the explicit or implicit security policy of the system. [11]

When a cloud is exploited by an ill-intentioned party for nasty purposes, the cloud itself is a threat against society. Intended threats are imposed by insiders and external intruders. Insiders are rightful cloud users who misuse their rights by using the cloud for malicious purposes.[11]

Intrusion detection systems are software or hardware systems that perform the process of monitoring the affairs occurring in a computer system or network. They analyze the system for any signs of security troubles and once found they notify the network and also try to eliminate the malicious activities. [11]

There are two types of response systems for intrusion detection systems:-

- 1) Manual response system allows the system administrator to initiate a manual response against an intrusion.[11]
- 2) Automatic response system immediately responds to an intrusion through auto response system.[11]

### 2.4 Non-Repudiation

Non-repudiation is the assertion that the sender is provided with proof of delivery and that the recipient is provided with proof of the sender's identity. This ensures that neither can later deny having processed the data [12]

The technique of non-repudiation ensures that someone doing an activity on a computer cannot treacherously deny that they performed that action such as transferring money, sending a message or authorizing a purchase. [13]

On the Internet, a digital signature is used to ensure that a document or message has been electronically signed by the person who claims to sign it. Since a digital signature can only be created by one person, it also makes sure that a person cannot later refuse that they provided the signature.

In the next section we explain non-repudiation in more detail and propose it as the emerging security requirement. [14]

## 3. THE EMERGING SECURITY REQUIREMENT OF CLOUD COMPUTING

### 3.1 Repudiation

To repudiate means to deny. Typically, repudiation refers to the denial of the authenticity of signature on a document or the sending of a message originated by a party to a contract or a communication.[15] Repudiation threats mean that the users deny performing an action and other parties have no way of proving it otherwise.[15]

Since many years, authorities have tried to make repudiation unattainable in some situations. For example, we send registered mail, so the recipient cannot refuse that a letter was delivered. Similarly, a legal document requires witnesses while signing so that the person who signs cannot deny having done so. [14]

In cloud storage service, data integrity depends on protection of the data in the storage medium along with security of both the uploading and downloading sessions. [16] The uploading phase can only make sure that the data received by the cloud storage is same as that uploaded by the user, similarly downloading phase ensures that the data retrieved by the user is the one sent by cloud storage. [16] Unfortunately, this procedure cannot entrust that the data is not modified in the storage space. So, there are no measures to guarantee whether the data has been tampered or not and if yes then who has tampered it? The user who uploaded the data or the cloud storage service provider?

The repudiation problem also gives a way for blackmailers. [16] For example: a user stores some data in the cloud, and later downloads it. Then, he falsely reports that his data was tampered due to the fault of the storage provider and also claims compensation for his so-called loss. Now, the service provider would need evidence to demonstrate his innocence.

Repudiation is not handled well on the current cloud storage platform. [16] The important link missing

between the uploading and downloading sessions is that there is no system for the user/service provider to know whether the information is modified in the cloud storage. [16]

In the next sub-section we discuss about non-repudiation which refers to the ability of a system to counter repudiation threats.

### **3.2 Non-Repudiation**

The non-repudiation service can be seen as an extension of the identification and authentication service.[17] Typically non-repudiation applies when there is electronic transmission of data. For example, an order to a stock agent to sell or buy stock, or an order to a bank to transfer funds from one account to another. In all, the objective is to be able to justify that a particular message is related to a particular individual. [17]

There are more than one components in non-repudiation service. Each component performs a different function.[17]

- 1) Non-repudiation service with proof of origin— when the sender of a message denies sending it, this service can present the recipient with undeniable proof that the message was sent by that particular individual.
- 2) Non-repudiation service with proof of delivery— when the recipient of the message denies receiving it, this service can present the sender with undeniable proof that the message was received by that particular individual.

For instance, e-mail non-repudiation comprises of methods such as email tracking that are devised to make sure that the sender cannot refuse having sent a message and/or that the receiver cannot deny having received it. [14]

Another example is use of digital signatures. They are more specifically related to non-repudiation of origin. By this technique, a person who has signed some information cannot deny at a later time that he has signed it [18]. Digital signature enables the creator of message to attach a code that act as a signature. It is formed by taking the hash of message and encrypting the message with creator's private key. To decrypt the encrypted message, a receiver uses the public key provided by the sender. The receiver has access only to the public key, access to private key is limited only to the sender. Thus it ensures a fraudulent party is not able to fake a valid signature. [18]

Since there is no absolutely fool proof security technology, experts alert that a digital signature alone may not ensure non-repudiation always [14]. Therefore it is advised that multiple approaches be used, such as keeping record of unique biometric information and other data about the sender or signer that en masse would be difficult to repudiate.[14]

In the real world it is a difficult task to provide proof with virtually 100% certainty or an undeniable evidence.[17] In practice nothing is completely safe. Security management is more associated with managing risk to a level which is admissible in business. In this kind of environment, a more practical prospect of the non-repudiation service is to be able furnish evidence that is acceptable and supports the case in a law court.[17]

## **4. CONCLUSION AND FUTURE WORK**

Cloud technology is very well known in today's era. But still Cloud Computing is not adopted readily due to security threats posed by cloud. Thus there is an urgent need to identify and classify the documented threats for finding the counter measures. New methodologies need to be used such as forming strategies for dealing with identified threats, developing ontology related to cloud threats etc. Security requirement of Cloud Computing needs more research work in its earlier stages so that the risk of threats decreases. The paper has focused on six important security requirements (Confidentiality, Integrity, Availability, Authenticity, Intrusion Detection, Non-Repudiation). Non-repudiation is one of the most crucial security requirement of all and needs to be more focused on for the cloud user, client as well as the service provider.

The future work is to deeply review about the protocols being used in non-repudiation and to embed them in the layers of Cloud Computing.

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# **SECTION C**

*Frontiers of Cloud Computing*

**RESEARCH PAPERS**

*(Session 2014-2015)*

# CLLOUD COMPUTING THREATS

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## **ABSTRACT:**

*Cloud Computing is an emerging form of technology in which the data is stored in cloud. The controlling of data remotely is made easier. Cloud computing has gone under a significant change making it more efficient and widely available for usage. With the increase use of cloud computing it has made it more vulnerable to security issues. Security concerns have given rise to an active area of research due to the security threats that many organizational institutions have faced at present. In this paper, we discuss the major security threats that are affecting cloud computing systems.*

**Keywords:** *Cloud computing, threats, Security Challenges*

## **INTRODUCTION:**

Cloud computing has been an important term in the world of Information Technology. Cloud computing is a type of computing which uses both the hardware and virtualized technology to provide services to the users. The main purpose of cloud computing is to provide the services on demand, in a short period time and usage based on cost. Also the user can transfer the image of the software or the data from one cloud to another. Though cloud computing is aimed to provide better utilization of resources using virtual techniques, yet vulnerable to some security threats which can cause harm to the user's and system. In this paper we describe some of the various security threats of cloud computing.

## **Cloud Computing**

Cloud computing is the computing that provides virtualized IT resources and services by using internet technology. A customer can use or access his data whenever needed. Cloud computing is becoming an adoptable technology for many organizations with the dynamic scalability and usage of virtualized resources as a service through the use of Internet. Cloud computing uses the Internet and remote servers to maintain data and applications.

## **Threats to Cloud Computing**

In the past, hackers used multiple computers or a botnet to produce a great amount of computing power in order to conduct cyber-attacks on computer systems. This process can be complicated and may take months to complete. These days, a strong computing infrastructure, including both hardware and software components, could be easily created using a simple registration procedure in a cloud computing service provider. By taking benefits of the prevailing computing power of cloud networks, hackers can attack in a very short period of time.

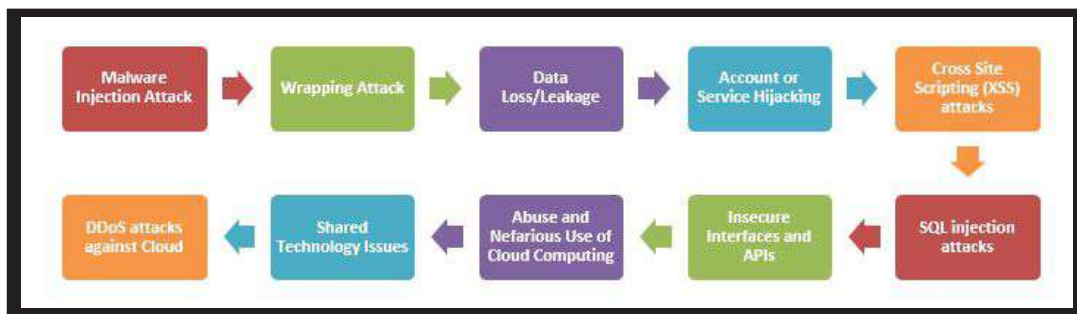
## **I.) Malware Injection Attack**

Web-based applications offer dynamic web pages for Internet users to access application servers with a web browser. Study has revealed that the servers are vulnerable to web-based attacks<sup>[1]</sup>. Malware injection attack is a category of web-based attacks, in which hackers exploit weaknesses of a web application and insert malicious codes into the application that changes the path of its regular execution. Like web based applications cloud systems are also defenseless to malware injection attacks. SQL injection attack and cross-site scripting attack are two of the most common forms<sup>[2]</sup>.

## **II.) Wrapping Attack**

Wrapping attacks use XML signature wrapping (or XML rewriting) to exploit a weakness when web servers

validate signed requests<sup>[3]</sup>. The attack happens during the translation of SOAP messages between a legitimate user and the web server. By reproducing an exact copy of user's account and password in the login period, the



hacker inserts a bogus element (the wrapper) into the message structure, altering the original message body under the wrapper, changes the content of the message with malicious code and then conveys the message to the server.

### III.) Data Loss/Leakage

This threat happens when an exclusion, change or improper appropriation of some data in the cloud is made<sup>[4]</sup>. We considered this the most explored threat nowadays, because it represents a large number of the most recent publications. The cloud solutions for Storage and Big data are also having a strong growth.

### IV.) Account or Service Hijacking

These threats range from man-in-the-middle attacks, to denial-of service attacks, to phishing and spam campaigns, fraud and vulnerability exploration, besides password credentials used indistributed ways, give amplitude to this problem<sup>[4]</sup>. The worry with kidnapping of accounts was the target of many cloud providers already consolidated in the market, such as Amazon<sup>[5]</sup>.

### V.) Cross Site Scripting (XSS) attacks

Injecting malicious scripts into Web is done in this type of attack. There are two techniques for injecting the malicious code into the web-page displayed to the user: Reflected XSS and Stored XSS. In a Stored XSS, the malicious code is permanently stored into a resource managed by the web application<sup>[6]</sup>. However, in The XSS attack script is not permanently stored; in fact it is immediately reflected back to the user<sup>[6]</sup>.

### VI.) SQL injection attacks

In this type of attack a malicious code is inserted into a standard SQL code. The attackers gain unauthorized access to a database and are able to access sensitive information and data.

### VII.) Insecure Interfaces and APIs

There are thousands of available APIs to be consumed, being also possible to build combinations of other APIs, known as Mashups. Those interfaces have serious standardization problems<sup>[7]</sup>, usually makes hard to apply a consistent security policy and the consequence is that many times access control, monitoring of activities, traffic of encrypted data, entry treatment, authentication, among other security aspects are ignored, offering a major risk to cloud computing<sup>[8]</sup>.

### VIII.) Abuse and Nefarious Use of Cloud Computing

Abuse and nefarious use of cloud computing is the top threat identified by the Cloud Security Alliance (CSA)<sup>[9]</sup>. A simple example of this is the use of botnets to spread malware and spam. Attackers can penetrate a public cloud, for eg: find a way to upload malware to hundreds of computers and use the power of the cloud infrastructure to attack other machines.

### IX.) Shared Technology Issues

The underlying modules that make up this infrastructure (e.g., GPUs, CPU caches, etc.) were not intended to offer high isolation properties for a multi-tenant architecture. To address this gap a virtualization hypervisor mediates access between guest operating systems and the physical compute resources.

**X.) DDoS attacks against Cloud**

Distributed Denial of Service (DDoS) attacks typically focus high quantity of IP packets at specific network entry elements; usually any form of hardware that operates on a Blacklist pattern is quickly overrun and will become in out-of-service situation. In cloud computing where infrastructure is shared by large number of clients.

**CONCLUSION:**

Cloud is a promising field, which is a step in advancement of data storage and remote access, but still vulnerable to some threats and new ways of exploitation are emerging. Further understanding them in order to develop security schemes to prevent further exploitation of cloud computing.

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# CLOUD COMPUTING ENHANCING INDIAN EDUCATION

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## **ABSTRACT:**

*Currently the classroom teaching is changing and students are flatter more to technology oriented it vital that we think about the latest technologies to incorporate in the teaching and learning process Cloud computing is the new technology that has various advantages and it is an adoptable technology in this present scenario. Cloud computing is growing rapidly, with applications in almost in any area, including education. This paper presents the benefits of using cloud computing for institutes and students. Cloud computing is the best solution & improve the current system of education and improve Quality at an affordable cost.*

**KEYWORDS:** *Cloud computing, SaaS, PaaS, IaaS.*

## **INTRODUCTION:**

### **CLOUD IN THE EDUCATION SECTOR**

With the rapid progression of technology and the evolution of emerging technologies such as cloud computing, the problems of reach and quality are addressed by permitting low cost employment of IT tools. Cloud enables education institutions to emphasis on its core activities and guarantee smooth operations and refining the quality of the teaching course gratified. The educational institutions now have a choice to influence many SaaS, PaaS and IaaS based contributions in the market without the need to invest in obtaining and maintenance of infrastructure. Remote classrooms permitted by cloud will help in consecutively numerous classrooms through a small group of teachers and will help overcome the problem of absence of skilled teachers. In addition, it will also lead to standardization of course content and education delivery means. The India Planning Commission of India, lays a huge importance on higher education. Cloud can play a huge role in delivering higher education by being an advanced platform for classroom lectures, using streaming on the web. Provided that cloud-enabled technologies can overcome student data privacy-related concerns, cloud can lay down a solid foundation for a transformational of the education system in India.

Over the last era, the education industry in India has grown up significantly. The education sector is by far the largest capitalized with government expenditure amounting to 30 billion USD and private spending to 50 billion USD<sup>3</sup>. In line with this, India has planned a 12.3% increase of budget for education starting this fiscal year, with greater pressure on school and vocational education. Also, 100 crore INR has been budgeted for forming virtual classrooms by leveraging technology to help the population exist in in remote areas. However, increased spending needs to be attended by higher diffusion of education to remote villages with increase in the quality and learning among students. The probable market size for the Indian education segment in 2015 is 602,410 crore INR from 341,180 crore INR in 2012. This demand is mainly due to the expected strong demand for quality education. At present the higher education system includes of about 700 universities and over 35,500 colleges.

### **IMPLEMENTATION OF CLOUD TECHNOLOGY IN EDUCATION SYSTEM**

Cloud computing technology can offer benefits to education system. Cloud computing allows users to control and admittance data via the Internet. The key users of a typical higher education cloud include students, Faculty, administrative staff and Admission Branch; all the main users of the institution are connected to the cloud. It provides the software, infrastructure and storage as a service & offers on-demand internet-based service. Teachers can upload their class Lessons, projects, and exams on the cloud server which students will be able to access all the teaching material provided by the teachers via Internet using computers and other mobile devices

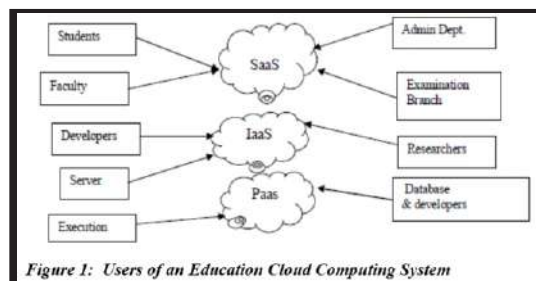
equally at home and college. This will not only make it promising for students to use online teaching materials during class but they will also be able to access these materials at home. Utilization of cloud computing systems will also reduce the price of operation because servers and education materials are shared with other colleges also.

## CLOUD OFFERS SERVICES THAT CAN BE GROUPED INTO THE FOLLOWING CATEGORIES:-

- A. Infrastructure as a service (IaaS):** Hardware resources (such as storage) and computing power (CPU and memory) are offered as facilities to clientele. This allows businesses to lease these resources rather than spending money to buy devoted servers and networking gear.
- B. Software as a service (SaaS):** In this software applications are presented as services on the Internet rather than as software packages to be bought by distinct customers. Examples Google web-based office applications (word processors, spreadsheets, etc.),
- C. Platform as a service (PaaS):** This signifies to providing services to support the complete application growth lifecycle with design, application, testing, debugging, operation, deployment and support of Web applications and facilities on the Internet. Examples are Microsoft Azure Services platform<sup>6</sup>, Google App Engine<sup>7</sup> & Internet Application Development platform<sup>8</sup>. PaaS enables SaaS users to develop add-ons, & standalone Web based applications.

## BENEFITS OF CLOUD COMPUTING FOR INSTITUTES AND STUDENTS;

- 1. Personalized Learning:** Cloud computing Allows chances for greater student prime in learning. Using an Internet-connected device, students can access a widespread array of resources and software tools that suit their knowledge styles and interests.
- 2. Reduced Costs:** Cloud-based services can help institutions lessen costs and accelerate the use of new technologies to meet growing educational requirements. Students can use office applications for free without having to buying, install and keep these applications update on their PCs. It also offers the capability of Pay per use for some applications.
- 3. Accessibility:** Availability of the services is the most significant and desired by the user using the education cloud.<sup>24</sup> X7 is the accessibility that is needed by this system without failure. From anyplace one can login and entree the information.
- 4. No Extra Infrastructure:** Colleges and governments are now permitted to focus on their objectives that are to making more research facilities obtainable to the students and making the environment worldwide in spite wasting time on worrying about the buildings, labs, teachers etc.
- 5. Go Green:** Education cloud will surely reduce the carbon footprint generated by the traditional teaching method.
- 6. User Friendly:** This new facility is user friendly and no need to worry about the complexity. It is easy to comprehend and easy to function.
- 7. Standardization of content:** Courses distributed over cloud through a central location will lead to a standard content delivery to numerous remote virtual classrooms.
- 8. Collaboration:** Students and teachers can collaborate on studies, projects using collaboration solutions.
- 9. Agility to rollout new courses:** Cloud-enabled technologies guarantee quick access to infrastructure services thereby rendering agility in rolling out fresher products.
- 10. Improved administrative efficiency of schools and universities:** Teachers and the administrative staff can emphasis on the core functions of the institute instead of futile efforts on IT infrastructure and the applications set-up.
- 11. Lower cost of education:** Leveraging on limited staff or teachers, a university can reach out to numerous students all across the globe, hence limiting the costs of education delivery.



**12. Scalability:** Scalable systems on cloud to facilitating big data platform for research and analysis.

### CONCLUSION:

The cloud computing has the substantial scope to change the whole education system. In current setup of education cloud computing is getting popularity and this application of cloud computing will surely help in the growth of the education accessible to students which will increase the excellence of education offered to them.

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## SECURITY ISSUES IN SOCIAL NETWORKING SITES

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### **ABSTRACT**

*Social networking is gaining prevalence in our society. It is not only popular in young generation but everyone is taking advantage of this revolution. It provides us a mechanism to be in contact with our friends and relatives in a very cheaper way. As it is well said that mechanism which are easily available generally contains breaches. Now a days identity theft, spamming, eavesdropping, malware attacks, viruses, phishing, informationleakage, etc are threats to the privacy of people. Because of such privacy issues interest of a lot of users turns down towards these social networking giants. These challenges impose several new research questions to the research community to ensure proper security of users of social networking websites. Caution is better than cure. The purpose of this research paper is to make people aware about breaches on social networking websites. This research paper states a comparative study on the security issues being faced by various social networking websites.*

**KEYWORDS:** *Social Networking, Security, Breaches, Facebook, Twitter and Skype*

### **Introduction**

Social networking sites are well-known sources of recreation basically for the youth. In fact these social networks have become an inherent part of today's Internet. They allow sharing of the information (whether personal or professional) with people who may be, old friends or strangers. According to recent survey people spend more time on these networking sites. According to the Pew Internet & American Life Project, more than 93% of both teens (12-17) and young adults (18-29) in the United States use the Internet regularly, and more than 70% use social networking sites. Furthermore, among online teens, 62% use the Internet to get news about current events and politics, 48% use it to make purchases (books, clothing, and music), and 31% use it to get health, dieting, or physical fitness information. It has become a part of our daily life as it is a economical and easy way to get connected with friends and relatives and unknown persons. It helps us to not only to facilitate data sharing but also sharing of emotions. Like for example, business men use it for their businesses it can help a lot to promote a product, it helps to interact with the clients or customers, it saves time, rather than meeting someone you can communicate by simply sending a text message without much expenditure, etc.

Social networks come in many different facets. Some are strong in a particular geographic location like Orkut in Brazil, VKontakte in Russia, or Mixi in Japan. Others are well known globally, like Facebook and Twitter. Depending on the user base, there are specialized or focused groups—LinkedIn and Xing have a business-oriented focus—enabling people to share business contacts and job offerings. Other networks specialize in keeping in touch with your old friends from high school.

As one of the main purposes of social networks is to find other people, all major networks provide search functionality with different criteria. Users can search for local friends by restricting the query to a single town, for co-workers by searching for a company name, or for like-minded people by searching for their favored artist. There are also independent meta search engines like Yasni or 123people, that will search a given name in multiple networks and return all results in one central place.

On the other hand, IT departments are often worried by social media. 84% of CIOs and 77% of system administrators asked are concerned about the security risks of their end users using social networks at work. Some companies are thinking of blocking the access to social networks completely instead of discussing the needs with their employees and making them aware of the risks. It is very difficult for administrators to prevent users from visiting social networks from work laptops while at home or when

using company smart phones. Therefore it's probably best to include it in the risk scenarios and create a realizable usage policy. The rest of the paper is organized as follows: In Section II, describes some of the social networking sites threats, whereas in Section III, states the security measures. Conclusion is reported in Section IV.

## **II. THREATS OF SOCIAL NETWORKING SITES**

There are a wide variety of threats causing harm to social network a brief description of some of these threats are stated below

### **Baits**

Image destroying can also be done through many search engine optimization techniques. In this mechanism keywords are used to make links and on this basis ranking of sites are done. Maximum social networks permit people to see what is stylish and hot at the moment. For example Twitter lists the top trending topics on its home page which makes it easily available for attackers, who automatically take hot keywords and include them in their spam messages to get a better listing. Some attackers even started manipulating Twitter messages before forwarding. The attackers generally search for those messages that contain hot keywords.

### **Follower scams**

With the rapid growth of importance of social networks people are more stressed to get people as more friends or followers as possible. In some social groups, acceptance of any person as a member of that group generally depends on his or her number of social connections. Generally school going students and college students are fascinated about it —the more online friends you have, the more popular you are. Some fake websites also offers the visitor free services like providing new followers to them for which you need to give them your user id and password . Obviously it is a bad idea to share your password with strangers, since you cannot control what will be done with your account. In most cases it is also against the terms and conditions of the social network.[6][9]

### **Impersonation of celebrities and friends**

Many a time's fake profiles of celebrities are seen on various social networks. Unfortunately there is no policy for stopping someone from registering a new account under the name of a celebrity or any one and similarly there are no policies for using a publicly available photo as a profile picture. In fact there are not real authentication that links a virtual profile to a real-life identity. Thus as long as the posted messages sound reliable people will think it is the official account. This type of fake account can then be used to spread fabricated information and rumors or to attract new followers that can later be spammed. Sometimes phishing attacks and local information-stealing Trojans are currently the most common causes of stealing personal information. Once an attacker obtains the password of any account he can manipulate the personal and professional information of that account holder and update the profile status. These update messages often include links to other malicious sites in order to get more account passwords. As the message seems to come from a friend's account people tend to trust it. This inherent trust, and the usual curiosity, leads to a high click rate on those malicious links, making the attacks very successful.[7][9]

### **Koobface**

The W32.Koobface worm has been one of the first large malware attacks, targeting social networks for years, and it is still wide-spread and active today. It is very successful as it uses clever social engineering attacks and counts on the link-opening behavior of social media users.[8][9]

### **Phishing**

It should come as no surprise that since social networking sites use user name and passwords for logging in, those services are also susceptible to phishing attacks. Just like with phishing attacks on

banks, social networking phishing comes in many different flavors. Currently the amount of phishing lures for community sites is relatively low at 3%, when compared to 78% targeting the financial sector. This clearly is because the profits for phished bank accounts are much higher. In addition, the creation of dummy accounts on social networks is rather simple and can be used to generate accounts for spamming.

### **Advanced fee scams**

By design, social communities are an interesting target field for advanced fee scams, also referred to as 419 scams. Since people willingly disclose a lot of private information, a scammer can easily identify possible victims that will fall for the scam and adjust the motives that the chosen social engineering trick will exploit. These types of scams typically come with a nice matching story that will present the victim some enormous benefit with apparently no strings attached. Later the scammer will inform the user about some unforeseen problem and will need a small amount to be paid up front. After the money is paid the attacker disappears, along with the promised benefits.

## **III. SECURITY MEASURES**

Some of the recommended key take-away strategies for avoiding the threats associated with the online social networks are described below:[10][11]

1. Awareness about disclosing personal information on social networks: Users need to be more conscious about the information they reveal through their personal profiles in online social networks.
2. Role of Government in raising awareness: Government should initiate different educational and awareness-raising campaigns to inform the users to make the rational usage of the Social Networking Sites as well as to encourage the providers to develop and practice security-conscious corporate policies.[10]
3. Restructuring and reframing security policies and framework: The existing legislation may need to be modified or extended due to the introduction of some issues like the legal position of image tagging by the third person which are not addressed by the current version. As a result, the regulatory framework governing SNSs should be reviewed and revised as it requires.
4. Strong and dedicated membership: The strength of authentication method varies from SNS to SNS. However, in order to avoid fake and troublesome memberships, the authentication mechanism needs to be further strengthened.
5. Information of setting default privacy and security preferences: Since most of the users are not aware of the necessity for changing the default privacy preference, it is essential to set the default setting as safe as possible.
6. Making available proper and authenticated security tools: Providers also need to offer the following strategies for better user control on different privacy and security-related issues.

## **IV Conclusion**

Various online social networking sites offer exciting new occasions for interface and communication, but at the same time promote new privacy worries. In this paper, we have briefly described some major features and benefits of social networking sites that have made internet technology as one of the most popular technologies of the present era. Our paper has also done a comparative study of critical security and privacy issues of these social networking sites. Finally, some recommendations are being made to enhance the security issues of SNSs' to ensure user benefits from the social network sites rather than distresses of its downsides. If these sites are not properly and carefully used with their security aspects then they can become the most dangerous and powerful tools to interrupt the personal as well as professional life of the users. A well-informed user will not only help to maintain security, but will also educate others on these issues and establish best practices which can be standardized and updated as applications mature or as new applications come along.

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# NON REPUDIATION: SECURITY IN CLOUD COMPUTING

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## **ABSTRACT**

*Cloud computing is computing in which the remote servers are allowed to reclaim the resources from the internet through the tools and applications based on web. Cloud computing is based on the sharing of resources of computing instead of having the local servers. Since cloud computing is the major and most important aspect today as it is used to increase the efficiency or for training the personnel and development of new software, so it is important to take steps for its security. Security is one of the difficult tasks. This paper will be the outline of the introduction of cloud computing and its security aspects. It focuses on the security requirements and it also deals with the description of non-repudiation in cloud computing. The goal of this paper is to identify and review the new methods of security present in the Information Technology sector.*

**KEYWORDS:** *Non repudiation, Cloud security, Cloud computing, Cloud, Security.*

## **1.1 Introduction to Cloud computing**

The term cloud computing may be referred to network or internet, which is present at remote location. Cloud Computing may be referred to as manipulating, configuring & accessing the applications online. Cloud Computing provides us a means by which we can access the applications as utilities, over the Internet. It allows us to create, configure, and customize the business applications online. Cloud computing is basically a computing in which the resources of computing are shared and networked by the remote servers to allow condensed the data storage.

The cloud is the “image” of the internet. So basically “The cloud” means type of computing based on the internet, where vast numbers of utilities are provided to the organization's system through the internet. Cloud computing depends upon the resources sharing to attain the consistency.

Cloud computing is the concept of intersection of infrastructures and the services to be shared. The cloud or cloud also emphasis on over-estimating the potency of the resources which are shared. The resources of cloud are generally not only allocated by different users but are also effectively reallocated per demand. This can work for designate resources to users.

Cloud computing is the result of the conclusion and approval of current technologies and paradigm. The aim of cloud computing is to grant users to take advantage from all the technologies, without the help for wide knowledge about or expertness with each one of them. Cloud computing aims to reduce the



cost, and helps the users target on their pivot business in place of being hindered by Information Technology barriers.

The main empowering technology for cloud computing is virtualization. Virtualization is a type of software that discrete a physical computing device to virtual devices. Each of these can be used easily and govern to execute the computing tasks. Virtualization provides the sharpness which is needed to speed up the operations of IT. Virtualization also reduces the cost by enlarging the infrastructure utilization.

Cloud computing is a type of grid computing. It has made by labeling the Quality of Service (QAS) and unequivocal problems. Cloud computing gives the tools and technologies to construct the data/enumerate thorough parallel applications with modest prices with comparison to the traditional parallel computing techniques.

Cloud computing possess some characteristics. These are as follows:-

- **Agility:-**The agility or promptness of cloud computing improves with the ability of the users to re-allocating technological infrastructure resources.
- **Application Programming Interface (API):-** Application programs interface (API) approachability to software that allows the machines to communicate with the software of cloud similar to that of a traditional user interface ease communication between humans and computers.
- **Cost reductions:** - The technique of virtualization in cloud computing reduces the cost by enlarging the infrastructure utilization.
- **Preservation:** - Preservation of applications of cloud computing is uncomplicated. The reason behind is that they do not need to be installed in each and every system of the users and can be retrieved from different places.

**Advantages of cloud computing:** - It reduces the costs on new software and improved flexibility. It helps in enhancing the accessibility and reducing capital costs and reduced infrastructure facilities. It is efficient and cheap.

**Disadvantages of Traditional computing:** - It is costly and more hardware is required. It is less efficient in comparison and less accessibility is required. But wastage of time and space is held.

Cloud computing is a computing prototype transposing where computing is transferred from personal computers to a cloud or the internet of computers. The only thing users of the cloud need to be treated with the computing utility being asked for because the fundamental aspect of how it is attained is concealed.

This procedure of dispensed computing is tender through merging all computer resources together and being governed by the software rather than a human. The utility being solicit of a cloud are not restricted to using web applications. It can also be Information Technology administration enterprise such as soliciting of systems, a software drift.

## 1.2 CLOUD SECURITY:-

Cloud computing is growing tremendously and is becoming the future of Information Technology industries. So cloud computing is an evolving domain of computer security. It mentions the set of some policies and technologies and also protects the data, applications and infrastructure affiliated to cloud computing.

The Information technology's organizations use cloud in different service models and development models. The service models include SaaS (Software as a service), PaaS (Platform as a service), and IaaS (Infrastructure as a Service). The development models include Private, Public, Hybrid and community. Many issues are there related to cloud security. These issues fall in two broad categories:-

The providers have to handle two types of security issues:

Through cloud the organizations provide the platform as a service and the issues of security faced by their clients. Both the ways are important. The remote server must confirm that the infrastructure of cloud computing must be secure and the data and applications of their clients must be secured with powerful signals and substantiation appraisals.

When a corporation chooses to store the data and provide applications on the public cloud, it loses the proficiency in a particular area to have physical access to the remote servers to providing its information. On the basis of Alliance report of cloud security one of the threats in cloud security is the attack of the insiders.

Therefore the providers of cloud security must be sure that thorough background checks are held for the employees who have the physical access to the remote servers in the centers. The centers must be customarily supervised for dubious activities. For conserving the service usually store the data of more than one customer on the same server. Due to this, the providers of the cloud security must provide appropriate data isolation and logical storage segregation.

The comprehensive use of virtualization in executing cloud infrastructure leads to the different security concerns for the customers on public cloud service.

## SECURITY AND PRIVACY:-

- Identity management

For computing the resources and to control the access to the information every enterprise has its own identity management system.

- Physical security:-

IT hardware is secured by the providers physically from floods, thefts, unauthorized access, etc. It makes sure that sufficient supplies are strong enough to minimize the disruptions.

- Personnel security:-

It includes the services like awareness related to security, disciplinary procedures and codes of conduct, policies etc.

- Availability:-

The provider of cloud must be sure that the individual can depend on access to their applications and data.

- Application security:-

The applications provided through SaaS must be secured through Designing, Implementing, etc.

- Privacy:-

The cloud providers must be sure that all the analytical data must be encoded and the specific user have access to that data.

### **1.3 Security requirements:-**

Cloud security requirement is a big issue today due to the increasing growth of the cloud computing in information technology sector. Since cloud computing is growing and it is a future of today's Information technology sector, so the security issues must be made to secure it. The organizations must adapt to the new policies that helps to overcome the threats and all the spams associated with the cloud computing. Security must need to be the top consideration.

Since transitioning assets related to the cloud are started by many organizations, the changes in the security controls must be implemented.

The cloud security services are growing day by day with many of the new and advanced options present for infrastructure of cloud and for the application and on-premise systems.

Sometimes the unauthorized services and applications are used due to the growing trend of the employees in cloud services. This is also known as Bring Your Own Cloud (BYOC).

The Basic fundamental tool of cloud security is encryption. It helps the organizations to defend the data.

It includes:-

1. Engine-level encryption
2. Key management
3. Encryption strategies for IaaS and SaaS

Non repudiation is the method to secure the cloud computing.

### **1.4 Non repudiation:-**

Non-repudiation is one of the security services. This security service is for point to point communications. Non-repudiation is the affirmation that someone cannot contradict something. Non-repudiation mentions the ability to safeguard that an association to a agreement or a communication cannot contradict the on a inventiveness of their signature on a contract or the message sending that they derived.

To repudiate means to contradict. Since many years, the jurisdiction has attempted to make repudiation beyond the bounds of possibility in some situations. A digital signature is used on the cloud or the internet to make sure that the document has been voltaic ally signed by the person that claimed to sign the message or document. And also when a digital signature is created by one person, it will make sure that the person cannot later contradict that they created the signature.

Expert's does not agree that digital signature is the only solution for non-repudiation. In non-repudiation we have examined the number of protocols messages. We have also examined the number of evidences to be ratified by involving institutions. The accomplishment shows that coherent specific

NR protocols need to be delineated.

The protocols evolved due to this are known as MULTIPARTY NON-REPUDIATION protocols (MNR). Firstly, the individual probe the prevailed Non Repudiation protocols and then continued them to multiparty scenarios. It helps in upgrading the effectiveness and the requirements for crypto operations than using multiple instances of the simple Non-Repudiation protocols.

### **1.5 CONCLUSION:-**

Cloud computing is the emerging computing technology of the Information Technology sector. This paper contains advantages of cloud computing and disadvantages of cloud computing. It also includes different services models like SaaS (Software as a service), PaaS (Platform as a service) and IaaS (Infrastructure as a service). Moreover, this paper includes development models like private, public, hybrid, and community.

Non-Repudiation is also the emerging security technology in the field of Information Technology. In future, we would be focusing on the attributes of Non-Repudiation.

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# PROBLEM FACED BY INDIAN EDUCATION IN CLOUD

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## ABSTRACT

*Cloud computing is the fastest developing technology in the IT field. It is the internet based computing which is useful in providing shared resources and all types of software to the users according to their demand. Cloud computing provides easy access to the educational sector and provides them high performance computing and storage infrastructure through web services. In this paper we analyze the characteristics of cloud computing such as newness, development of architecture, its attractiveness and its vulnerability. During this research we also have investigated that cloud also affected privacy and security measures of Formal and informal institutions. As the users deal their important and sensitive data on clouds the major problem for cloud adoption are lack of security and is easy to control. So it is necessary to build up proper security measures for cloud computing. So the aim of this paper is to provide the overview of Cloud computing to all its users with the aim to highlight its vulnerability and security issues faced by its users.*

**KEYWORDS:-***Cloud computing, Cloud security, Cloud education, Security issues, Vulnerability*

## I. INTRODUCTION

Cloud computing is the most rapidly distributed computing technology. Most of the IT companies announce to plan or already have IT products according to cloud computing paradigm. It differs from traditional ones in that and is extremely scalable. Cloud computing is still not mature enough due to its most critical flaw in security. At the same time education institutions in India are under the pressure for delivering more for less cloud computing can provide those solutions to them.

But Indian education institutions are not being able to use cloud due to security measures and its vulnerability. In the nearest future, we can expect to see a lot of new security exploitation events around cloud computing providers and users, which will shape the cloud computing security research directions for the next decade. Hence we have seen a instantaneous growth of a cloud computing security discipline with continuing efforts to cope with distinctive requirements and capabilities regarding privacy and security issues.

Both public and private institutions can use the cloud to deliver better services, even as they work with fewer resources. By sharing IT services in the cloud, your education institution can outsource expendable services and better concentrate students, teachers, faculty, and staff the essential tools to help them succeed in their work. In this expansion during our research we closely noticed cloud computing on a technical level. Focussing primarily on attacks and hacking attempts related to cloud computing providers and systems.

We pointed out lately, the specific security threats and vulnerabilities of services and service-oriented architectures require new security criteria for the safety of the data of the institutions. During our research we try to predict the classes of security issues that will arise from the cloud computing paradigm, and we give elementary solution for these, based on the notion of attack surfaces.

## II. CLOUD COMPUTING

**a) Definition**

Cloud computing is defined as a computing in which ample casts of distant servers are meshed to provide online access to computer services or resources, allows centralized data storage. Clouds could be designated as public, private or hybrid.

**b) Characteristics**

- **On-demand self service:** means that users (usually formal or informal organizations) can demand and deal with their own computing resources. Broad association access allows services to be presented over the Internet or personal networks.
- **Broad network access:** Cloud abilities are presented over the internet and pocketed through criterion mechanisms that sponsors use by varied user platforms such as mobile phones, laptops etc.
- **Working:** of cloud computing is noticed and consistent and loosely coupled architectures are developed using web services.
- **Rapid flexibility:** Cloud services can be quickly and flexibility provisioned, in some cases routinely, to speedily scale out and quickly released to speedily range in. To the user, the abilities presented for provisioning frequently appear to be limitless and can be purchased in any amount at any point in time.

**c) Types of clouds**➤ **Private Clouds:**

Private cloud is cloud infrastructure which is simply used by a single organization which is whether managed internally or by the third party and attended either internally or externally. A private cloud is a particular representation of cloud computing that includes a separate and safe cloud based surroundings in which only the particular client can operate. As with other cloud models, private clouds will give computing authority as a service within a virtualized atmosphere using a primary pool of physical computing resource.

➤ **Public Clouds:-**

Public cloud computing uses cloud computing technologies to support customers that are exterior to the provider's association. Using public cloud services produces the different types of economies of size and distribution of resources that can lessen costs and increase options of technologies. From a government organization's point of view, using public cloud services involves that any association (in any industry sector and education sector) can use the similar services (e.g., infrastructure, platform or software), without assurances about where data would be placed and stored.

➤ **Hybrid Clouds**

A hybrid cloud is a cloud computing atmosphere in which an association offers and manages some resources in-house and has others supplied exteriorly. For example, an organization may use a public cloud service, such as Amazon Simple Storage Service for collected data but keep on to maintain in-house storage for procedural user data. The hybrid approach permits a business to take benefit of the scalability and cost-efficiently that a public cloud computing environment offers without exposing mission-serious appliances and data to third-party vulnerabilities.

**d) CLOUD SERVICE MODELS:**➤ **Infrastructure as a service (IaaS):-**

The services on the development layers are used to access enough IT resources that are joint under the caption Infrastructure-as-a-Service (IaaS). These necessary IT resources include services connected to computing resources, data resources, and the communications guide. They enable accessible applications to be provisioned on cloud resources and new services applied on the upper layers.

➤ **Platform as a Service (PaaS):-**

PaaS comprises the environment for rising and developing cloud applications. The primary users of this layer are IT developers looking to develop and run a cloud application for a

particular stage. They are supported by the stage operators with an open or own language, a set of necessary basic services to make easy communication, monitoring, or service billing, and various other components, for instance to facilitate startup or ensure an application's scalability and/or elasticity. Distributing the application to the primary infrastructure is normally the duty of the cloud stage operator. The services obtainable on a cloud stage tend to represent cooperation between complexity and flexibility that allows applications to be implemented rapidly and loaded in the cloud without much configuration.

➤ **Software as Services (SaaS)**

Software-as-a-Service provides entire applications to the cloud users. It is mainly accessed through a web portal and service oriented structures based on web service technologies. Credit card or bank account details must be provided to enable the fees for the use of the services to be payable for the users. The services on the application layer can be seen as an addition of the ASP (application service provider) representation, in which an application is run, maintained, and supported by a service vendor.

### **ISSUES IN CLOUD EDUCATION:-**

Cloud computing has been developed since last few years into the one of the fastest developing segments of the IT industry. Nowadays cloud computing is used by educational institutions. The education sector is the second largest sector globally and Indian school system is the world's largest school system. Both public and private institutions can use the cloud to give the better results even within the use of fewer resources at any time.

There are several concerns surrounding the implementation of security in cloud computing. Cloud security is the most primary concerns of the education sector. Data placed in storage clouds can be potentially be located in could be sent across the communication channels of a totally different country, with potentially different data privacy laws and therefore expose potentially sensitive and secret data to the snoop eyes of the hacker or unauthorized individual.

Creeger (2009) indicates that the majority of vulnerabilities on cloud computing gives the typical result of internal attack done by the hackers to steal the private and sensitive data present in cloud.

On the other hand, in a higher education setting, this can become more challenging especially with research projects that address issues of national security. Across all forms of operation construction and work structure the basic idea of cloud computing leftovers to be the concept of working out over the second-hand hardware/resources.

If allowing for several networks of users, a three-level set of connections can be considered: i) users of fundamental services ii) occupants who supply services iii) grantors who grant the infrastructure. The solution to increasing faith in cloud computing is guaranteeing the user or occupants of safety being implemented and continued in all elements contributing to his fundamental services.

Promising safety principals of the overall system to the service-user at the apex level and allowing for the concept of computation over second-hand hardware between all the levels makes promise of security properties for fundamental services a very difficult task. As privacy must not be contained by revealing too much information between layers some inter level/stakeholder interfaces are required.

### **CONCLUSION**

Cloud Computing is a relatively new concept that presents a good number of benefits for its users; however, it also raises some security problems which may slow down its use. Understanding what vulnerabilities exist in Cloud Computing will help organizations to make the shift towards the Cloud. Since Cloud Computing leverages many technologies, it also inherits their security issues.

As arise in this paper, storage, visualizations, and networks are the biggest security issues in cloud computing. Visualization which allows multiple users to share data such as information, applications

etc. On the server is one of the major security issues for the cloud users. Virtual networks are also target for some attacks especially when communicating with remote virtual machines.

Some of the surveys have discussed safety issues of cloud education without making any variation between its vulnerabilities and threats. We have focused on this feature, where we consider important to understand these issues. Enumerating these issues was not enough; that is why we made a relationship between threats and vulnerabilities, so we can identify what vulnerabilities contribute to the finishing of these threats and make the system more healthy. Also, some current solutions were listed in order to mitigate these threats. However, new security techniques are needed as well as redesigned traditional solutions that can work with cloud architectures. Traditional security mechanisms may not work well in cloud environments because it is a complex architecture that is composed of a combination of different technologies.

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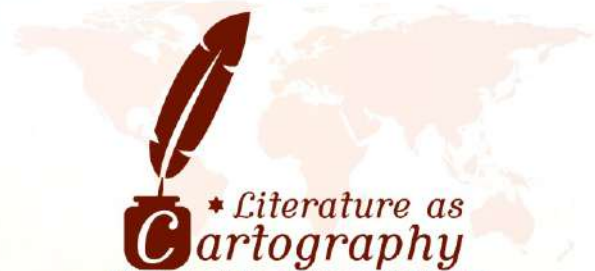
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# Editor's Speak



## Technical Editor

While this has been a demanding task, it has also been a rewarding and fulfilling experience. With the position focussing on programming environment platform documentation we had a chance to enhance our creative skills and sharpen our technical aptitude. We hope that the work represented here will further encourage students to undertake projects of their own, reflecting the creative and academic potential of students.

(Roopak Bhama and Vaibhav Agarwal)



## Assistant Editor

The application of knowledge is one of the most important aspects of learning. This principle is reflected in the material presented in the Informatica. Being a part of the Student Editorial Board has given us the opportunity to learn from every step of the process and help us to gain the experience that we will be able to apply to our research throughout our education and future careers.

(Harshi Sharma and Sahil Mehta)

## Co-editor

Being a member of the editorial team gave me an opportunity to write and edit the research papers. As an author of paper myself, it was very motivating to read the papers written by different authors and to acknowledge their willingness to impart knowledge to society by their writing. I felt extremely lucky to have this opportunity as it not only enhances my knowledge but also helps me to explore the hidden side of mine.

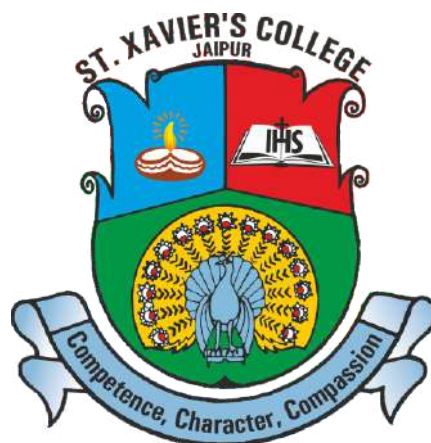


(Raj Yadav)



*Research is to see what everybody else has seen, and to think what nobody else has thought.*

*-Albert Szent Gyorgyi*



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