



**4TH INTERNATIONAL  
MULTIDISCIPLINARY  
E-CONFERENCE  
V-CMT**

**4th December,  
2021**



**'TRANSFORMING  
WITH CHANGING  
DIMENSION IN  
INDUSTRY AND  
EDUCATION'**

**V-CMT DEC 2021**

**ISBN:978-93-5578-200-7**

## **INTERNATIONAL MULTI-DISCIPLINARY E-CONFERENCE**

**Theme:**

**Transforming with Changing Dimension  
in Industry and Education**

**4<sup>th</sup> December, 2021**

**Editor- Dr. Rohini Kelkar**

**Published By: Dr. Rohini Kelkar**

**VIDYALANKAR SCHOOL OF INFORMATION TECHNOLOGY,  
MUMBAI**

**Edition I**

**ISBN: 978-93-5578-200-7**

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## MESSAGE FROM PRINCIPAL

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Vidyalankar School of Information Technology (VSIT), a Commerce, IT and Management college affiliated to University of Mumbai, has always been organising activities pertaining to the current topics of interest to the academicians, industrialists, students, and all other stakeholders of an education system. The theme of V-CMT 2021 - an international multi-disciplinary e-Conference - "Transforming with Changing Dimension in Industry and Education" falls in the same tradition. V-CMT 2021 has encouraged a fair and free participation of scholars in this exercise. We have received many good research papers in various tracks. Even the students have expressed themselves through research papers on current issues.



I take this opportunity to thank everyone who has contributed towards a fruitful organisation of the Conference. I would like to thank our Guest of Honour Dr. Ing. Yashodhan Gokhale and chief guest Dr. P. Sekhar and our Expert Panelists- Ms. Nusrat Mujawar, Mr. Abhishek Gupta, Dr. Anuradha Mujawar and Moderator of the Panel Discussion Dr. Swagatika Nanda for investing their valuable time for this conference. I would also like to acknowledge the efforts of the college management, faculty members, the organising committee, and all the other faculty members and staff of Information Technology, Commerce, Management and Arts Departments of VSIT.

I would also like to thank our Session Chairs- Dr. Thirvukurussu, Dr. Mary Immaculate Sheela Lourdusamy, Dr. Ajit More, Dr. Bageshree P. Bangera Bandekar, Dr. Sarika Chouhan and Dr. Poonam Mirwani for their valuable feedbacks and encouragement to the presenters. Their critical reviews of the papers presented, and their valuable feedback would enrich authors to upgrade their papers.

Last but not the least, I would like to extend my gratitude to all paper presenters and delegates who have made it possible for us to organise such a One Day International Multi-Disciplinary e-Conference V-CMT 2021.

**Dr. Rohini Kelkar**

Principal,  
Vidyalankar School of Information Technology,  
Wadala, Mumbai

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# Industry 4.0

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Track 1



## A Study on the reliability of Financial Advertisements on Investment Decisions of Individuals

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### **ABSTRACT**

Financial Advertisements are advertising related to financial products and services of banks, insurance companies, mutual funds and other financial institutions. These advertisements mainly appear in print, T.V and digital medium. These advertisements can play a major role in informing individuals about the various financial products and services available to them. This study is an attempt to study the reliability of financial advertisements on the investment decisions of individuals residing in Mumbai and Lucknow. This study will attempt the use of suitable statistical tools and techniques to understand whether investors rely on advertisements for investment decisions or not. An attempt will also be made to find out the factors which could enhance the reliability of these advertisements on the investment decisions of individuals. The emphasis of the study would be on finding out the interrelationship between financial ads and investment decisions of individuals and the risk factors related to investment decisions based on the same.

*Keywords: Financial Advertisements, Financial Products and Services, Investment Decisions*

### **1. INTRODUCTION**

“The most powerful element in advertising is the truth.” – Bill Bernbach

The Cambridge Dictionary defines Financial Advertising as “the advertising of financial businesses and services such as banks, investment companies, loans, and mortgages.”

This study deals with the reliability of Financial Advertisements on Investment Decisions of Individuals. This study is carried out with special reference to investment decisions of individual investors on the basis of financial advertisements in terms of mutual funds, insurance and shares.

The purpose of any advertisement is to grab attention, then to generate interest, to convince, so to create the belief. If an advertisement contains these three qualities of success, it is a successful advertisement (Lewis, 1899). The AIDA Model tries to grab attention through:

**A - Attention (Awareness):** It is the process of attracting the attention of the customer. In developing an advertising program, marketing managers should always start by identifying the targeted audience and its reasons to purchase a specific product or service.

**I - Interest:** This can be defined as the process of raising customer interest by focusing on and demonstrating advantages and benefits (instead of focusing on features, as in traditional advertising).

**D - Desire:** It is the way to convince customers that they want and desire the product or service and that it will satisfy their needs.

A - Action: It is the final phase that leads customers towards taking action i.e. purchasing and doing positive word of mouth.

Financial Advertisements are generally known for creating fear factor eg. Insurance Ads and are generally not considered very reliable for making investment decisions.

## 2. RESEARCH METHODOLOGY

This study is conducted in two major cities where the researchers reside namely – Mumbai and Lucknow and has a sample size of total 100 respondents (50 each in Mumbai and Lucknow respectively) which responded to the questionnaire.

Sampling Method: Non-Probability; Convenience Sampling

Data Collection: Primary – Through Questionnaire; Secondary – Through Books, Magazines, Research Papers and so on.

Limitations: Time Constraints

### Objectives of the Study

- The study intends to find out the reliability of Financial Advertisements for investment decisions
- To find out the effectiveness of financial advertisements in letting the investors know about various investment avenues and all other relevant information
- To find out whether financial advertisements are the main source of investment decisions
- To find out whether financial advertisements are reliable
- To find out whether financial advertisements are ethical
- To assess whether there is equal reliability on Financial Advertisements in Mumbai and Lucknow

## 3. LITERATURE REVIEW

Mutual funds use advertisements as a way to communicate with investors. Due to increased competition, advertising for mutual funds has been increasing (Jordan and Kaas, 2002). Jain and Wu (2000) found a strong cause-and-effect relationship between mutual funds advertising and investment decisions. Thus, advertisements provide us with a window into the assumptions made by mutual funds about their investors' decision-making process.

As per the study carried out by Bruce A. Huhmann and Nalinaksha Bhattacharyya on “Does Mutual Funds Advertising provide necessary investment information?” the researchers concluded that mutual funds advertisement isn't providing the necessary investment relevant and reliable information. Various tools and techniques were adopted for the same.

Mutual Funds were introduced in India by UTI in 1963 and it enjoyed a monopoly in the Indian mutual fund market until 1987, and post that government-controlled Indian financial companies established their own funds, including State Bank of India, Canara Bank and by Punjab National Bank.

So, in India also the advertisement of mutual fund by various bank and financial institutions are getting increased day by day aiming to make more people aware of the investment in

mutual fund and the risk and gains related to mutual funds. According to MutualFundIndia.com, currently there are more than eleven thousand mutual fund schemes offered by forty companies in India. The most prevalent companies among these, based on QAAUM (Quarterly Average Asset Under Management), are ICICI Prudential, HDFC Mutual Fund, Birla Sun Life Mutual Fund, Reliance Mutual Fund, SBI Mutual Fund, and UTI Mutual Fund. These six companies account for almost 65% of the total QAAUM.

For Mutual Funds related financial advertisements there are guidelines are prescribed by SEBI. A review in 2017 allowed for celebrity endorsements at industry level but not for promoting a particular scheme. Permission has to be taken for such advertisements. The CAGR of the performance of the Mutual Funds in the past 1, 3 or 5 years needs to be advertised.

In a study conducted by “Bhavik U. Swadia”: A STUDY ON INVESTMENT IN SHARES, AND COMPARATIVE ANALYSIS OF BROKING FIRMS” also discusses about the impact of financial advertisements in terms of broking firms and investment in shares. The guidelines of SEBI related to advertisements of shares are to be adhered to.

In a study conducted by Ms Sunayna Khurana on: “Customer Preferences in Life Insurance Industry in India” the importance of insurance is emphasized upon. The main purpose of this paper is to find out the consumer preferences towards life insurance. A minor part of the paper covered the customer opinions about insurance ads.

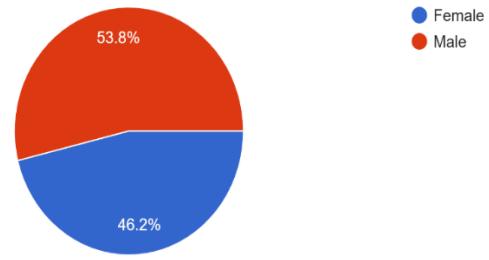
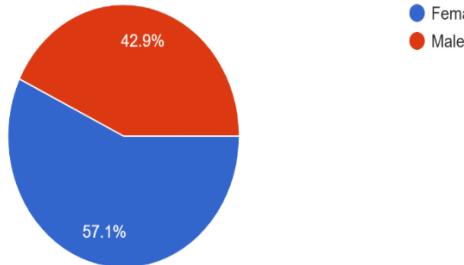
IRDAI has issued Master Circular is issued under Section 34 (1) of the Insurance Act, 1938 read with Section 14 (1), 14 (2) (e) of the IRDA Act, 1999, to protect the interests of the insuring public, enhance their level of confidence on the nature of sales material used and ultimately encourage fair business practices. They are to be considered as the minimum standards to be adhered to, in addition to compliance with the IRDA (Insurance Advertisements and Disclosure) Regulations, 2000 (hereinafter referred to as ‘Advertisement Regulations’) and the code of conduct prescribed by the Advertisement Standards Council of India (ASCI) and any other laws, regulations as applicable. These provisions reinforce the extant regulations on all promotional communications with policyholders/prospective policyholders or targeted market segment with the objective of soliciting insurance business or otherwise.

#### 4. DATA ANALYSIS AND INTERPRETATION

The data collected from 100 Respondents (50 from Mumbai and 50 from Lucknow) throws light on the opinion of investors about Financial Advertisements related to Mutual Funds, Insurance and Shares.

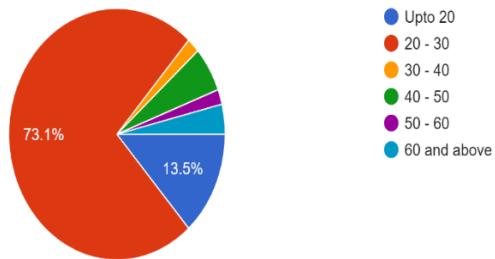
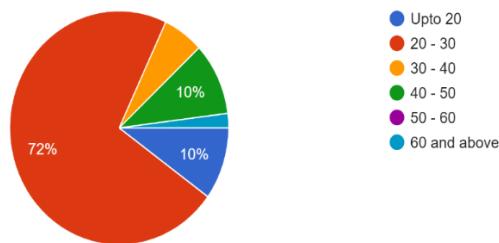
The following are the summary of responses:

- Gender of Respondents:



In Mumbai, the respondents were 42.9% (Female) and 52.1% (Male) and in Lucknow 53.8% were males and 46.2% were females.

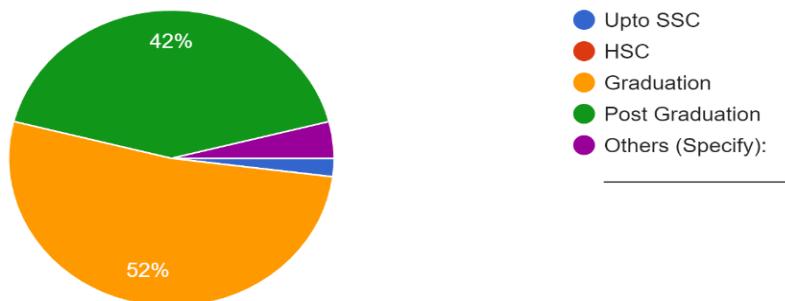
- Age Group of Respondents:



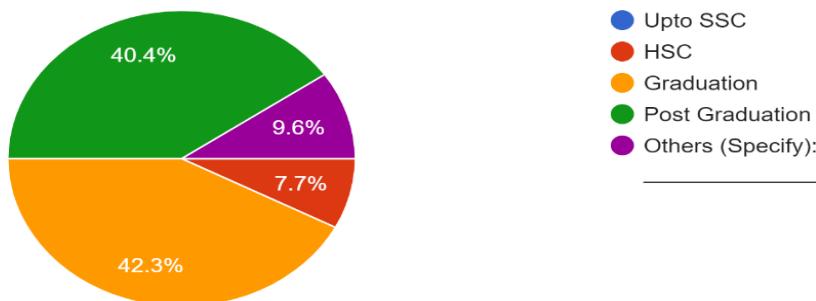
The major respondents of Mumbai and Lucknow were of the age group 20-30 and the findings are a reflection of this age group.

- Educational Qualification

Mumbai



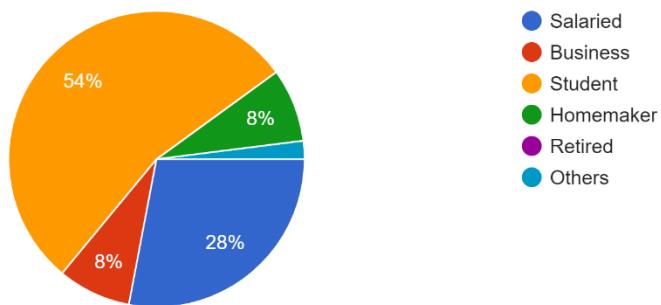
Lucknow



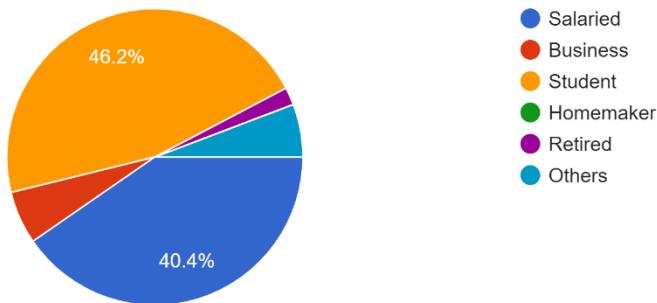
Majority of the Respondents Are Post Graduates and Graduates

- Occupation

Mumbai



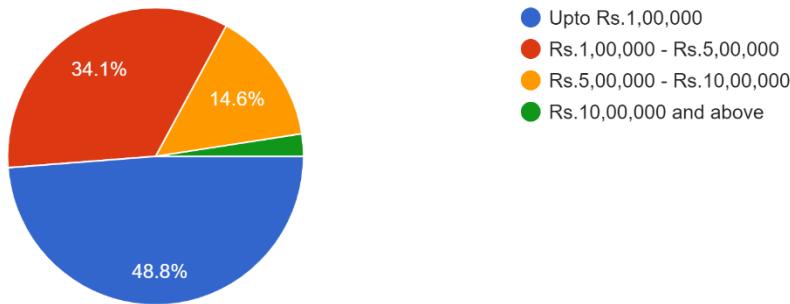
Lucknow



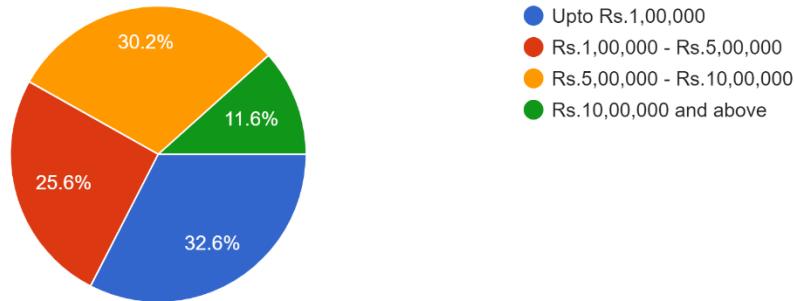
Majority of the respondents are the student community.

- Income Group of Respondents

Mumbai

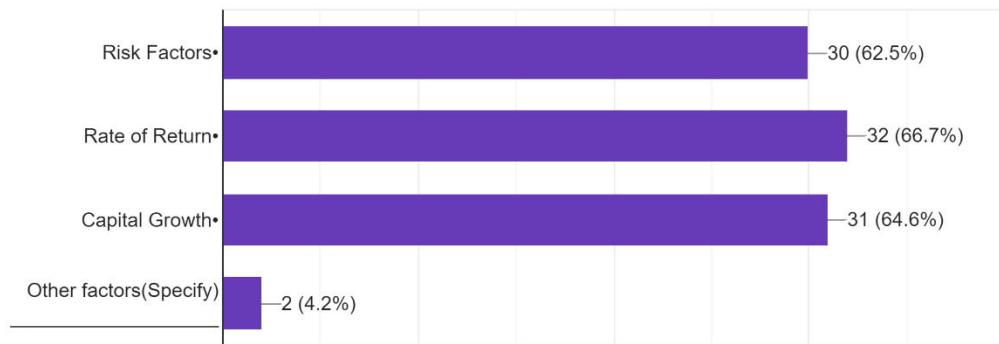


Lucknow

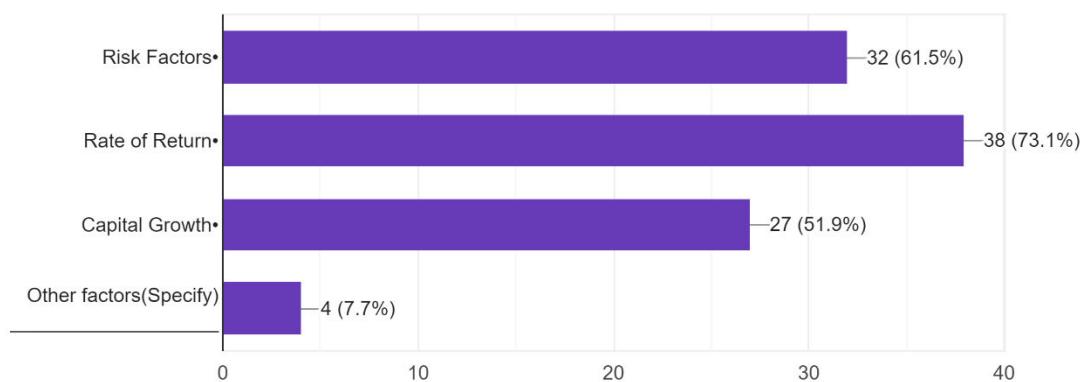


Major respondents i.e. 48.8% and 32.6% respectively in Mumbai and Lucknow were of the income group of upto Rs.1,00,000 p.a. and hence the responses could be based on that

- Aspects which make Financial Advertisements more reliable(Mumbai):

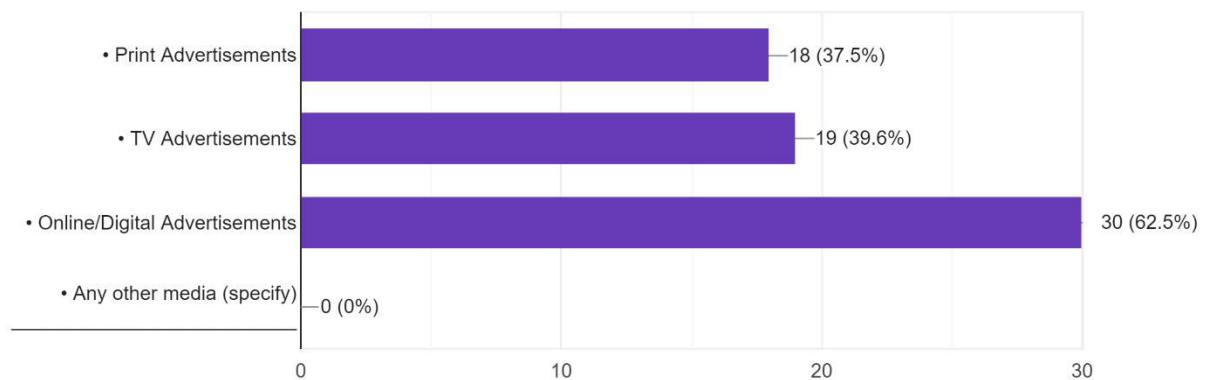


- Aspects which make Financial Advertisements more reliable(Lucknow)

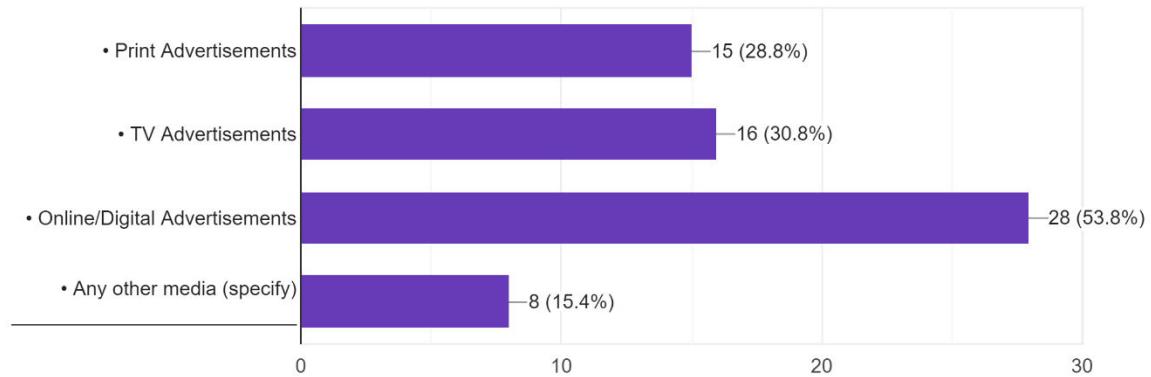


Rate of Return is a feature which most of the respondents would like to know correctly to be able to make investments based on financial advertisements.

- Preferred Media for Financial Advertisement:  
Mumbai



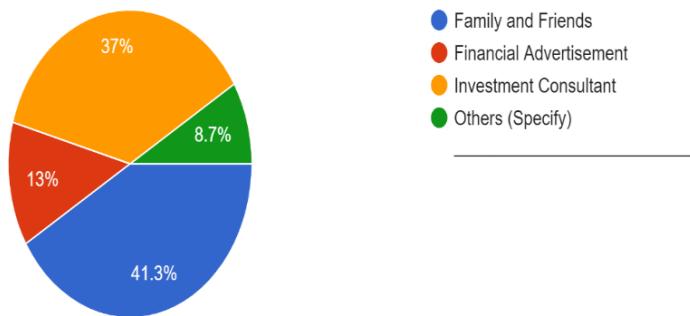
Lucknow



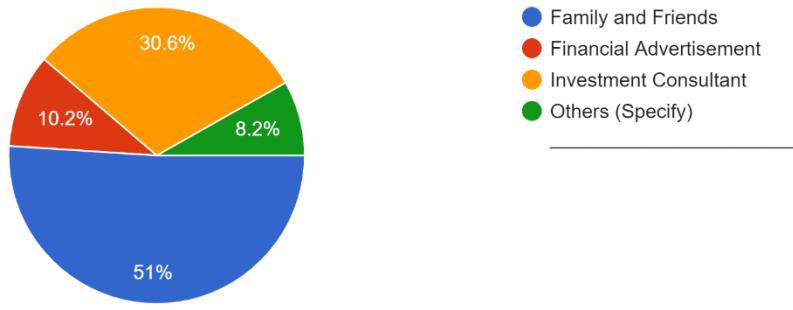
The most preferred medium of financial advertisements in both the cities is online/digital advertisements.

- Source of Information for making investments

Mumbai:



Lucknow



Financial Advertisements aren't considered a major source of information for investments in both the cities.

The study has made use of the following statistical tools and techniques:

- Cronbach's Alpha ( $\alpha$ ) for testing the internal reliability of the data
- Non-Parametric Test: Chi Square for testing of the hypothesis
- Non-Parametric Test: Mann Whitney U Test for finding out whether there is a difference in the reliability rankings between Mumbai and Lucknow responses

#### A. Cronbach's Alpha ( $\alpha$ ):

Cronbach Alpha was performed for the Likert Scale Responses (Strongly Agree -5 and Strongly Disagree 1) based on Investors opinions about Financial Advertisement:

No of items	10
Sum of the Items variance ( $V_i$ )	8.996407
Variance for total score of all respondents ( $V_t$ )	38.77414
Cronbach's Alpha( $\alpha$ )	0.85331

Cronbach's Alpha ( $\alpha$ ) Interpretation:

Cronbach's Alpha	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

The Cronbach's Alpha( $\alpha$ ) is 0.85331. This means that the internal reliability of the data is Good.

#### B. Chi Square( $\chi^2$ ):

The Chi Square was conducted for test of association between the variables.

Hypothesis 1: Investment Decisions Based on Financial Advertisements:

Observed Responses:

Yes	No	Maybe	Total
21	55	24	100

Degree of Freedom =  $(C-1) = (3-1) = 2$

Df 2, 0.05 (At level of significance 5% ) = 5.991 (Critical Value)

CV= 5.991

$\chi^2 = 21.97$

Conclusion – We will reject  $H_0$  as  $\chi^2 > CV$

The P-Value is .000017. The result is significant at  $p < .05$ .

The smaller the p-value, the stronger the evidence that you should reject the null hypothesis.  
So, it means that investment decisions are based on financial advertisement.

Hypothesis 2:

$H_0$ : Financial advertisements are not reliable for investment decisions

$H_1$ : Financial advertisements are reliable for investment decisions

Observed Responses:

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree	Total
24	6	52	14	4	100

Chi-Square ( $\chi^2$ ) = 76.4

Degree of Freedom =  $(C-1) = (5-1) = 4$

Df 4, 0.05 (At level of significance 5%) = 9.488 (Critical Value)

CV = 9.488

The P-Value is < .00001. The result is significant at  $p < .05$ .

Conclusion – We will reject  $H_0$  as  $\chi^2 > CV$

So, it means that financial advertisements are reliable for investment decisions.

Hypothesis 3: Information about Different Avenues of Investment is available through Financial Advertisements

$H_1$ : Financial advertisements give idea about different avenues of investments and varied financial products and services.

$H_0$ : Financial advertisements does not give idea about different avenues of investments and varied financial products and services.

Observed Responses

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree	Total
57	17	18	5	3	100

Degree of Freedom =  $(C-1) = (5-1) = 4$

Df 4, 0.05 (At level of significance 5%) = 9.488 (Critical Value)

CV = 9.488

$\chi^2 = 71.35$

The P-Value is < .00001. The result is significant at  $p < .05$ .

Conclusion – We will reject  $H_0$  as  $X^2 > CV$

So, it means that financial advertisements give idea about different avenues of investments and varied financial products and services.

Hypothesis 4: Financial Advertisements convey all relevant information about financial products and services

$H_0$ : Financial Advertisements are not able to convey all relevant information about financial products and services.

$H_1$ : Financial Advertisements are able to convey all relevant information about financial products and services.

Observed Responses

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree	Total
30	5	38	21	6	100

Degree of Freedom =  $(C-1) = (5-1) = 4$

Df 4, 0.05 (At level of significance 5%) = 9.488 (Critical Value)

$CV = 9.488$

$X^2 = 42.3$

The P-Value is < .00001. The result is significant at  $p < .05$ .

Conclusion – We will reject  $H_0$  as  $X^2 > CV$

So, it means that financial advertisements are able to convey all relevant information about financial products and services.

Hypothesis 5: Whether Financial Advertisements give a clear idea about benefits of investments

$H_0$ : Financial Advertisements does not give a clear idea about the benefits of the investments i.e. mutual funds, insurance policies and shares.

$H_1$ : Financial Advertisements give a clear idea about the benefits of the investments i.e. mutual funds, insurance policies and shares.

Observed Responses

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree	Total
32	7	35	21	5	100

Degree of Freedom =  $(C-1) = (5-1) = 4$

Df 4, 0.05 (At level of significance 5% ) = 9.488 (Critical Value)

CV= 9.488

$X^2 = 38.20$

The P-Value is < .00001. The result is significant at  $p < .05$ .

Conclusion – We will reject  $H_0$  as  $X^2 > CV$

So, it means that financial advertisements give a clear idea about the benefits of the investments i.e. mutual funds, insurance policies and shares.

Hypothesis 6:

$H_0$  : Financial Advertisements does not guide investor in the right direction.

$H_1$ : Financial Advertisements guide investor in the right direction.

Observed Responses

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree	Total
30	7	40	14	9	100

Degree Of Freedom =  $(C-1) = (5-1) = 4$

Df 4, 0.05 (At level of significance 5% ) = 9.488 (Critical Value)

CV= 9.488

$X^2 = 41.3$

The P-Value is < .00001. The result is significant at  $p < .05$ .

So, it means that financial advertisements guide investor in the right direction shares.

Hypothesis 7: Financial advertisements could be the main source of investment information.

$H_0$  : Financial Advertisements is not the main source of investment information.

$H_1$  : Financial Advertisements could be the main source of investment information.

Observed Responses

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree	Total
32	3	28	21	16	100

Degree Of Freedom =  $(C-1) = (5-1) = 4$

Df 4, 0.05 (At level of significance 5% ) = 9.488 (Critical Value)

CV= 9.488

$X^2 = 25.70$

The P-Value is  $< .00001$ . The result is significant at  $p < .05$ .

Conclusion – We will reject  $H_0$  as  $X^2 > CV$

So, it means that financial advertisements could be the main source of investment information.

Hypothesis 8: Whether Financial Advertisements offer recall value

$H_0$ : Financial Advertisements does not offer recall value while choosing investment avenues.

$H_1$ : Financial Advertisements offer recall value while choosing investment avenues.

Observed Responses

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree	Total
31	5	46	15	3	100

Degree Of Freedom =  $(C-1) = (5-1) = 4$

Df 4, 0.05 (At level of significance 5% ) = 9.488 (Critical Value)

$CV = 9.488$

$X^2 = 67.25$

The P-Value is  $< .00001$ . The result is significant at  $p < .05$ .

Conclusion – We will reject  $H_0$  as  $X^2 > CV$

So, it means that financial advertisements does not offer recall value while choosing investment avenues.

Hypothesis 9: Whether Financial Advertisements does not provide the right sources to confirm the information

$H_0$  : Financial Advertisements does not provide the right sources to confirm the information.

$H_1$  : Financial Advertisements provide the right sources to confirm the information.

Observed Responses

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree	Total
25	1	46	20	8	100

Degree Of Freedom =  $(C-1) = (5-1) = 4$

Df 4, 0.05 (At level of significance 5% ) = 9.488 (Critical Value)

$CV = 9.488$

$X^2 = 60.03$

The P-Value is < .00001. The result is significant at  $p < .05$ .

Conclusion – We will reject  $H_0$  as  $X^2 > CV$

So ,it means that financial advertisements provide the right sources to confirm the information.

Hypothesis 10: Whether it is riskier to make investment decisions based only on financial advertisements.

$H_0$  : It is not riskier to make investment decisions based only on financial advertisements.

$H_1$  : It is riskier to make investment decisions based only on financial advertisements.

Degree Of Freedom =  $(C-1) = (5-1) = 4$

Df 4, 0.05 (At level of significance 5% ) = 9.488 (Critical Value)

$CV = 9.488$

$X^2 = 56$

The P-Value is < .00001. The result is significant at  $p < .05$ .

Conclusion – We will reject  $H_0$  as  $X^2 > CV$

So ,it means that it is riskier to make investment decisions based only on financial advertisements.

Hypothesis 11: Whether Financial Advertisements are ethical

$H_0$  : Financial Advertisements are not ethical

$H_1$  : Financial Advertisements are ethical

Degree Of Freedom =  $(C-1) = (5-1) = 4$

Df 4, 0.05 (At level of significance 5% ) = 9.488 (Critical Value)

$CV = 9.488$

$X^2 = 88.90$

The P-Value is < .00001. The result is significant at  $p < .05$ .

Conclusion – We will reject  $H_0$  as  $X^2 > CV$

So ,it means that financial advertisements are ethical.

C. Mann Whitney U Test or Wilcoxon Rank Sum Test : This test was conducted to know whether there is a difference in the reliability rankings between Mumbai and Lucknow responses.

Hypothesis:

$H_0$ : The reliability ranks of both Mumbai and Lucknow are equal

H1: The reliability ranks of both Mumbai and Lucknow are not equal

The p-value equals 0.9721,  $p(x \leq Z) = 0.486$ . It means that the chance of type I error, rejecting a correct  $H_0$ , is too high: 0.9721 (97.21%). The larger the p-value the more it supports  $H_0$ .

The test statistic Z equals -0.03499, which is in the 95% region of acceptance: [-1.96 : 1.96].  $U=1244.5$ , is in the 95% region of acceptance: [969.9451 : 1530.0549].

Thus,  $H_0$  is accepted. This means that the reliability ranks of both Mumbai and Lucknow are equal.

### **Summary of Findings**

- The responses indicate people are neutral about the reliability of financial advertisements
- Financial Advertisements are considered ethical but riskier for making investments
- Financial Advertisements do not have a good recall value
- The preferred medium of financial advertisements is online/digital advertisements
- People are ready to invest a maximum of 25% of investments based on financial advertisements in mutual funds, insurance and shares
- People feel that all relevant information about the financial advertisements should be disclosed and monitoring of these ads is very important

### **5. CONCLUSION**

Financial Advertisements aren't considered as a major source of information for investment decisions and are considered risky. Financial Advertisements are providing information about various investment avenues. However, Financial Advertisements do have a good recall value. There is a need for more informative and reliable financial advertisements for investment decisions.

**REFERENCE**

1. Bruce A. Huhmann and Nalinaksha Bhattacharyya on “Does Mutual Funds Advertising provide necessary investment information?”
2. Kishore Bhattacharjee and Rohit Kumar Amity Global Business School, Patna- 01, Bihar, India: THE EFFECT OF TV ADVERTISING ON MUTUAL FUND BUYING BEHAVIOR: A STUDY BASED ON AIDA MODEL
3. Ms Sunayna Khurana, Lecturer, ICFAI National College, Customer Preferences in Life Insurance Industry in India; e-mail Id: sunaynak@rediffmail.com, sunaynak@gmail.com
4. Mutual Fund Definition (investopedia.com)
5. Cambridge Dictionary (for Definition of Financial Advertisements)
6. <http://www.emedicclaim.com/companies.html>
7. [www.sebi.gov.in](http://www.sebi.gov.in)
8. [www.irdai.gov.in](http://www.irdai.gov.in)
9. [www.economictimes.in](http://www.economictimes.in)
10. <https://www.karvyonline.com/knowledge-center/beginner/share-meaning-and-types-of-shares>
11. <https://www.nseindia.com/trade/members-code-of-advertisement>

# An Empirical Analysis of Technologies and Applications in Robotics Industry 4.0

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## **ABSTRACT**

The industry 4.0 is new industrial model that characterizes the fourth industrial revolution. The recent years, there has been dynamic changes in the industrial environment as result of further new innovations called Industry 4.0. The Robotics as a field that deals with creating humanoid machines that can behave like human begins. The proposed approach is dedicated to researches and robotics applications can implement to the concept of Industry 4.0 in enterprises.

## **1. INTRODUCTION**

The modern world economy has entered the fourth industrial revolution through it is at an early stage and revolutionary digital technologies are still being developed and posted. In the past few years, the global industrial environment has changed deeply due to successive technological developments and innovations in manufacturing process.

The Industry 4.0 is a strong combination of operational technology (OT) and information Technology then robotics in production. The Industry 4.0 concept is the result of the technological progress of the fourth Industrial revolution. The industry 4.0 is a technological system with many innovations called technology 4.0. Robotics and Automation, 3D printing, Collaborative robots (cobots), Cloud computing and interact of things to be implemented on a large scale in the smart factories in the future.

The recent years can act like humans in certain situations but can they think like human. This is where artificial intelligence comes to AI allows robots to act intelligently in certain situations. These robots may be able to solve problems in a limited sphere or even learn in controlled environments. For example, of this is kismet which is a social interaction robot developed at M.I.T's Artificial Intelligence lab.

## **2. HISTORY**

The history of robotics is one that is highlighted by a reality world that has provided the inspiration to convert fantasy in to reality. Considering the combination of the three fundamental aspects that contributed to the emergence of industry, namely, knowledge, experimentation and enterprise neural innovation, industrial revolutions could have their consolidation designed.

The first aspects, knowledge refers to the range of understanding of scholars and inventors of decades ago, who researched, and investigated sought possibilities for great new discoveries at the time and was able to increase their ability to understand the concept.

The second aspects, experimentation is the process for making explicit the knowledge of scholars and collaborators in order to prove and prove that possibilities and a feasibility.

The third aspects, entrepreneurial innovation is the confidence of employers of the time to believe in and invest in new discoveries and work models and ways of providing and an expanding their business and sales never before imagined.

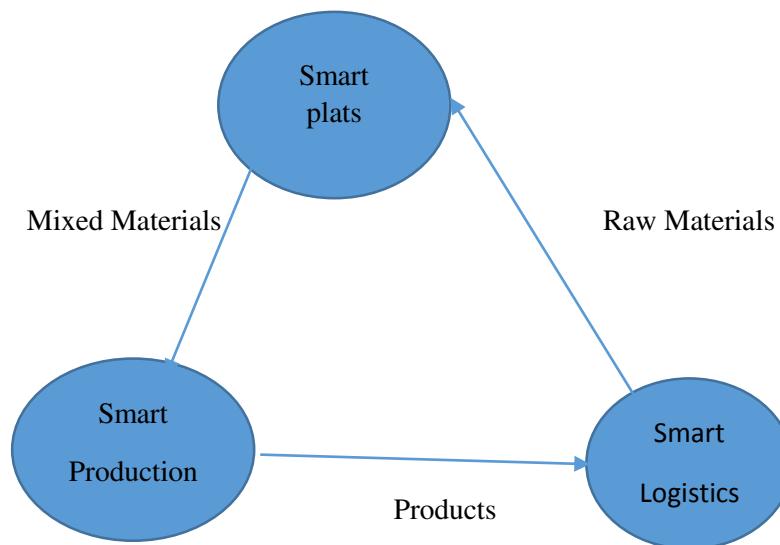
At one end of the spectrum is the science fiction version of a robot. Typically, one of a human form.an android or humanoid with in features.in ISO the international organization for standardization defines a robot as an “automatically controlled, reprogrammable, multipurpose manipulator with three or more axes”. The robot institute of America desigrates a robot as “a programmable, multifunctional manipulator designed to move material, parts, tools or specialized devices through various programmed motions for the performance of a variety of tasks.

### 3. UNDERSTANDING OF INDUSTRY 4.0

The term “Industry 4.0 “comes in the context of a new industrial revolution which emphasizes and includes the latest technological innovations and aids in both fast and customized production. The aim of promoting manufacturing automation and consequently increasing productivity through “Smart Factories” the still imminent fourth industrial revolution can be characterized by the integration between the interact and production process.

The robotics industry 4.0 is not only a technical challenge but also a reality that will significantly change the organizational structure of companies. new level of socio technical interaction autonomous and self-organized production resources carries out planning process in value chains between organizations.

Smart Products: The products and the tolerable operating parameter of a certain production process are mutually known. These products can be grouped to optimize production.



Individualized production: flexible configuration enables industries to consider the specific characteristics of customer demand and product doing design, planning, production and recycling phase.

Autonomous control: Employee's control and configure intelligent production resources based on targets sensitive to the present context.

Product design controls product related data: product related data becomes a central feature in managing its product life cycle.

#### **4. DESIGN PRINCIPLES OF INDUSTRY 4.0**

The industry 4.0 encompasses six stages of design principles in that framework which are called decentralization, Virtualization, interoperability, Modularity, real time capability and service orientation. These principles are called "Design Principles" Because they contribute to the design process of common Industry 4.0 to Industry 5.0.

##### **DECENTRALIZATION:**

The first design principle of Virtualization Is that by using machine to machine (M2M) Monitoring and communication a virtual twin can be abstracted from the industry. The sensor data is listed to virtual plant models and simulation models. A virtual copy of the physical world can be created.

##### **INTEROPERABILITY:**

The principle of interoperability in the industry 4.0 manufacturing environment is that facilities capable of automatically exchanging information, initiating actions and controlling each other independently. The embedded manufacturing systems are vertically with business process internal to industries by connecting software and programs.

##### **MODULARITY:**

The principle of modularity involves modular systems that can flexibly adapt to changing requirements by replacing or expanding individual production modules making adding or removing modules much easier.

##### **REAL TIME CAPABILITY:**

The principle of real time capability systems that is the manufacturing process intelligent machines with specific software will automatically adapt to the process and decision making by CPS to the productive needs, thus monitoring the product quality in order to make decisions at every moment of need.

##### **SERVICE ORIENTATION:**

The principle of service orientation according to characterized by the availability, through internet of human business services and CPS which can be used by other stakeholders facilitating the creation of product service systems also known as product services.

##### **ROBOTICS IN INDUSTRY:**

Running in parallel with the development in research laboratories the use of real points in industry blossomed beyond the time of Engr Berger and devol's historic meeting. In 1954 Plant Corporation developed the first commercially available robot which was controlled by limit switches and cams. The machines have long moved out of research labs to venture into new spheres. They are expected to continue the epic migration towards to automotive sector and more. Robots are already contributing to higher quality products and shorter turnaround times in the manufacturing sector.

**BRAWN, BONE & BRAIN:**

**Brawn-** Strength relating to physical-to-physical payload that a robot can move.

**Bone** –The physical structure of a robot relative to the work it does this determines the size and weight of the robot in relation to its physical payload.

**Brain** – Robotic intelligence: what it can think and do independently how much manual interaction is requird.

## 5. WORK AT INDUSTRIAL ROBOTS

The number of robots in the world today is approaching 1,00,000 with almost half that number in japans and just 15% in the US. A couple of decades ago 60% of robots where used in car manufacturing, typically on assembly lines during a variety of repetitive tasks. Today only 50% are in automobile plants, With the other half spread out among other factories, laboratories warehouses, energy plants, hospitals and many other industries. Industry 4.0 robots are used for assembling products handling dangerous materials, spray, painting, cutting and polishing inspection of products.

**The latest innovations in robotics:**

These robots are providing to be effective at basic tasks and jobs. Here are some of the latest robots innovations and why there needs to be skilled mechatronics engineering technologist to help repair and maintain all of these great robots.

**(i) Google worker robots:**

Google is planning to produce worker robots with personalities the industry 4.0 Technology grant recently won a patent for the ambitions project. The robots have the capacity to store and display multiple personalities when interacting with humans.

**(ii) Multi-tasking bots:**

The momentum machines developed a multitasking bot capable of preparing a government fiam burger in as little as 10 seconds. If all goes well, the robot could eventually be used in fast load restaurants.

**(iii) UR3 arm:**

An automated device created by universal robots known as UR3 can built its own. Replacement parts on the fly. The cute and nimble robot can handle a variety of tasks, such as painting, Soldering and grapping.

**(iv) Saul Robot:**

Saul robot is designed to help fight deadly diseases like that Ebola Virus. The machine was developed by the Air-force to eliminate the virus in rooms while quarantine procedures are conducted an aid worker. These robots developed by Xenex; Sail eradicates traces of EBOLA using powerful pulses of highly energetic ultraviolet rays.

**(v)Asus Zenbo:**

This a low-cost robot capable of rolling around automatically and understand verbal Commands. Developed by the device to help individuals remember daily tasks, such as exercise and medication schedule as well as doctor's appointments.

**(vi)Paro:**

Paro is therapeutic robot with the appearance of a baby harp seal. The fairy device is intended to help lower stress levels and stimulate interaction between caregivers and patients. It comes with five different sensors, Including light, tactile, audition and temperature sensors.

**(vi) Pepper:**

Pepper is a talking humanoid robot that adapts its attitude based on how it perceives the mood of humans around it. This allows it to accurately understand emotional context. Its developers embedded up to 20 engines in the head, back and arms to regulate movements.

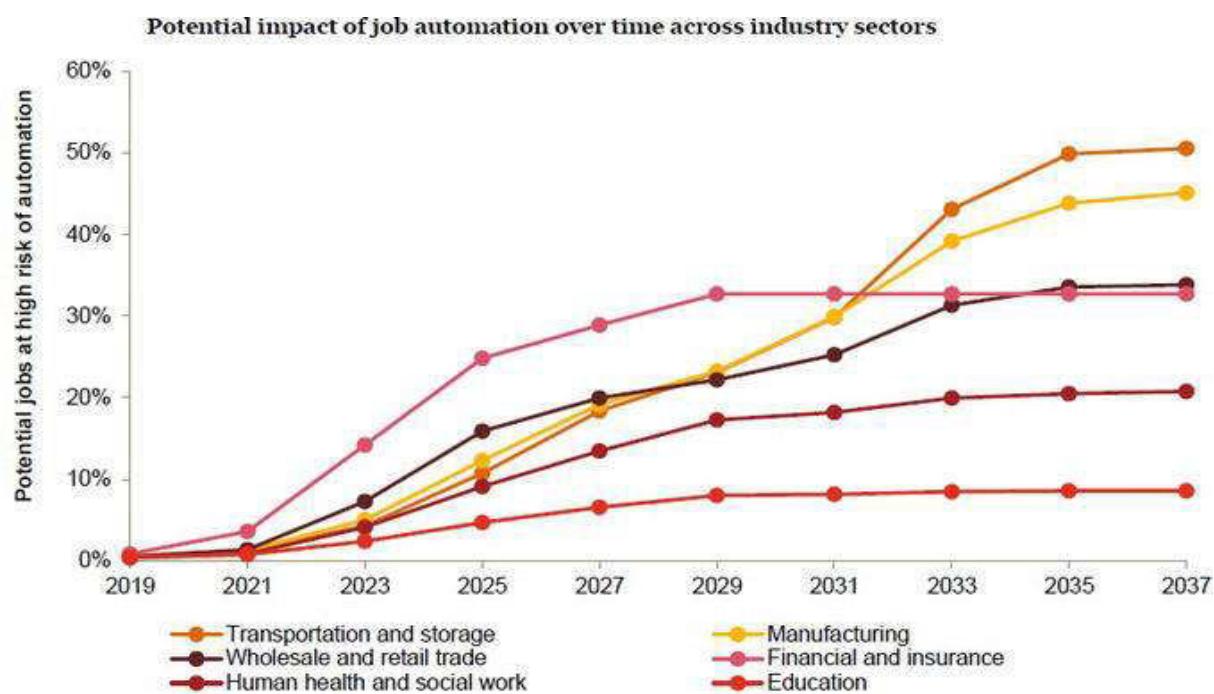
## 6. COMPARISON OF INDUSTRY VERSIONS

Features	Industry 3.0	Industry 3.5	Industry 4.0
<b>Concept</b>	Operational decision	Digital decision	Self-flexible, self-adaptable and self-learning
<b>Production</b>	Mass Production	Flexible Manufacturing	Mass Customization
<b>Quality Control</b>	Statistical Process Control	Advanced Process Control	Self-aware and Self-predict
<b>Resources Management</b>	Materials and Human Resource Management	Total resource Management	Self-configure and Self-optimize
<b>Development Priorities</b>	Hardware investment	Integration of ability of data analysis and experience of management	CPS and IoT

## 7. INDUSTRY PROCESSES

In Industry 3.0, we automate processes using logic processors and information technology. These processes often operate largely without human interference, but there is still a human aspect behind it. Where Industry 4.0 comes in is with the availability and use of vast quantities of data on the production floor.

For an example of the old way (Industry 3.0), take a CNC machine: while largely automated, it still needs input from a human controller. The process is automated based on human input, not by data. Under Industry 4.0, that same CNC machine would not only be able to follow set programming parameters, but also use data to streamline production processes.



Source: PLIAC data, PwC analysis

## 8. CONCLUSION

Industry 4.0 is used interchangeably with the fourth industrial revolution and represents a new stage in the organization and control of the industrial value chain. Robotics is an innovative technology used for the various development industries. Owing to This technology helps the floor, helps employees effectively perform their duties, and reduces or removes all physical stress. Network and connectivity are two of the most critical considerations in facilitating Industry 4.0. A variety of advances in technology such as edge-to-cloud, gigabit ethernet time-sensitive networks, wide-area low-power networks, 5G technology machine-to-machine connectivity, real-time determinist ethernet networking, omnipresent radio access and unified IoT platform, and zero-touch networks are enabling factories to introduce IoT to turn into facilities for Industry 4.0.

## REFERENCES

1. <http://www.oemupdate.com/technology/top-robotic-applications-in-automotive-industry/>
2. <https://www.popsci.com/hitachi-hires-artificial-intelligence-bosses-for-their-warehouses>
3. <https://www.rfidjournal.com/articles/view?12083>
4. <https://qz.com/672708/siemens-is-building-a-swarm-of-robot-spiders-to-3d-print-objects-together/>
5. <https://wiprodigital.com/2018/11/13/the-rise-of-industrial-autonomous-vehicles/>
6. <https://newatlas.com/boeing-echo-voyager-trials/50010/>
7. <https://wiprodigital.com/2018/11/13/the-rise-of-industrial-autonomous-vehicles/>
8. <https://compliancenvigator.bsigroup.com/en/medicaldeviceblog/robotics-in-healthcare/>
9. <https://www.industrialpackaging.com/blog/why-robotic-packaging-automation-is-the-future>
10. <https://www.nbcnews.csiom/mach/science/robots-are-replacing-humans-world-s-mines-here-s-why-ncna83163>
11. <https://www.investopedia.com/articles/markets/011216/4-industries-robots-are-revolutionizing.asp>
12. <https://edition.cnn.com/2018/12/07/business/walmart-robot-janitors-dotcom-store/index.html>
13. Abele, E.; Reinhart, G. (2011): Zukunft der Produktion. Herausforderungen, Forschungsfelder, Chancen. München: Hanser, Carl
14. Ammon, U. (2009): Delphi-Befragung In: Kühl, S. (Ed.): HandbuchMethoden der Organisationsforschung. Quantitative und qualitative Methoden. Wiesbaden: VS, Verlag fürSozialwissenschaften, pp. 458–476
15. Atzori, L.; Iera, A.; Morabito, G. (2014): From "smart objects" to "social objects": The next evolutionary step of the internet of things. In: IEEE Communications Magazine, 1 (2014), pp. 97–105
16. Kagermann, H.; Wahlster, W.; Helbig, J. (Eds.) Recommendations for Implementing the Strategic Initiative Industrie 4.0: Final Report of
17. the Industrie 4.0Working Group. Industrie 4.0: Mit dem Internet der Dinge auf demWegzur 4. Industriellen Revolution; VDI-Nachrichten:Frankfurt, Germany, 2011.
18. 2. Kagermann, H.; Helbig, J.; Hellinger, A.; Wahlster,W. Recommendations for Implementing the Strategic Initiative Industry 4.0:
19. Securing the Future of German Manufacturing Industry. Final Report of the Industry 4.0 Working Group Forschungsunion. 2013.
20. Available online: <https://www.din.de/blob/76902/e8cac883f42bf28536e7e8165993f1fd/recommendations-for-implementing-industry-4-0-data.pdf> (accessed on 2 February 2020).
21. 3. Kagermann, H.; Wahlster, W.; Helbig, J. Final Report of the Industrie 4.0 Working Group; Acatech-National Academy of Science
22. and Engineering: München, Germany, 2013. Available online: <https://en.acatech.de/publication/recommendations-for-implementing-the-strategic-initiative-industrie-4-0-final-report-of-the-industrie-4-0-working-group/> (accessed on10 January 2020).
24. 4. Kagermann, H. Change through Digitization—Value Creation in the Age of Industry 4.0. In Management of Permanent Change;
25. Springer: Berlin/Heidelberg, Germany, 2015.
26. 5. Schuh, G.; Potente, T.; Wesch-Potente, C.; Hauptvogel, A. Sustainable Increase of Overhead Productivity due to Cyber-
27. Physical-Systems. Available online: <https://www.sciencedirect.com/science/article/pii/S2212827114006453> (accessed on 10 February 2021). [CrossRef]

28. 6. Haller, S.; Karnouskos, S.; Schroth, C. The Internet of Things in an Enterprise Context. In Future Internet Symposium; Springer:
29. Berlin/Heidelberg, Germany, 2008; pp. 14–28.
30. 7. Oks, S.J.; Fritzsche, A.; Mösllein, K.M. An Application Map for Industrial Cyber-Physical Systems. *Ind. Internet Things* **2017**.

# A Study on Performance Analysis of Nifty Index Mutual Funds Industry

## 4.0

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### **ABSTRACT**

A mutual fund is a professionally managed investment fund that pools together the savings of a number of investors who share the common financial goals. These investors may be retail or institutional in nature. It offers small or individual investors access to professionally managed portfolios of equities, bonds and other securities. It is equally useful for the HNIs (High Net-worth Individuals) who wish to park their money in relatively riskier instrument and thereby getting an opportunity to get higher returns. Some types of mutual funds are very much useful for the corporate who wish to park their large amount of money for a short period of time in an instrument where they can get an opportunity of getting handsome rate of returns. The paper is the study of the performance of Nifty Index fund. This is analysed empirically since the period of 2015 – 2020. The main objective of this research is to evaluate the performance of Nifty Index funds. The study examined three parameters such as active returns, tracking error, Risk Measures. In this paper the data will be collected from the Primary as well as secondary sources.

**Keywords:** *Financial Performance, Index Fund, Risk Adjusted Return, Tracking error.*

### **1. INTRODUCTION**

Mutual Fund is a tool of investment for the investors who have a common goal of investment. It has been a part of the capital market of the economy. Almost every economy in the world which is having its own capital market has the mutual fund industry. The name MUTUAL FUND indicates itself that the people who MUTUALLY agree to carry out a common activity i.e. investment with a common goal by creating a pool of investment which is called as FUND.

A mutual fund is a managed group of owned securities of several corporations. These corporations receive profits on the shares that they hold and realize capital gains or losses on their securities traded. Investors purchase units in the mutual funds as if it was an individual security. After paying operating costs, the earnings (dividends, capital gains or losses) of the mutual fund are distributed to the investors, in proportion to the amount of money invested.

Mutual Funds are useful as a tool of investment for various classes of the society. For a retail investor, mutual funds provide a very simple way of investment through which they can invest in stock market and other investment options. A retail investor who is not aware about the workings of stock market but still is interested in the investment in stock market can start his investments through mutual funds. During the last few years, mutual funds have emerged as the instrument of investment and is considered for the investment planning for the post-retirement investment.

An Index Fund is a form of mutual fund that invests in a specific set of stocks of an index like BSE Sensex or NSE NIFTY. A portfolio of an index fund built to inform or track the additives of a market index and it offers massive marketplace exposure low portfolio turnover and low operating expenses. These finances observe the unique standards or regulations such as Efficient tax management or reducing tracking error that stay in location, there may be no matter the country of the markets. The main advantage of index funds for investors lies in its cost. Since the mutual fund require only passive fund management, they are much cheaper than more actively managed fund in which portfolio managers make an effort to choose the right stocks.

Since index funds track a market index and are passively managed, they are less volatile than the actively managed equity funds. Hence, the risks are lower. During a market rally, index funds returns are good usually. However, it is usually recommended to switch your investments to actively managed funds during a market slump. Ideally, you should have a healthy mix of index funds and actively managed funds in your equity portfolio. Further, since the index funds endeavour to replicate the performance of the index, returns are similar to those of the index. However, one component that needs your attention is Tracking Error. Therefore, before investing in an index fund, you must look for one with the lowest tracking error.

## 2. LITERATURE REVIEW

**Venkatapath Raju** (2016) has authored a book which explains in detail about the description about different types of products of mutual funds with their investment objectives. The book also tries to match the objectives of the mutual fund schemes with the investors' expectations from such schemes. The author has tried to match the expectations of the investors' expectations with the objectives of the mutual fund schemes so that the investors get a proper scheme for investment. A detailed explanation of various types of mutual funds schemes explains the benefits and limitations so that the investor can select the proper scheme. The book also attempts to provide information to assist to investor to assess their risk return profile and accordingly choose the right product. One unique thing about the book is that it analyses the factors which motivates the mutual fund investors to take their investment decisions.

**Muralidhar Prasad Ayaluru (2016)** evaluates the performance of mutual fund schemes. The study selected 10 open ended Equity mutual fund schemes which were offered by the Reliance Mutual Fund.

**P. Krishna Prasanna (2012)** studies the characteristics and growth pattern of all the 82 Exchange Traded schemes. The schemes are floated and traded on Indian Stock markets. The study measures the performance using DEA (Data Envelopment Analysis) method. The analysis reveals that the overseas fund of funds as well as the Gold funds were able to mobilize greater resources and were able to impress the investors.

**S. Narend (2014)** presents a comparative study of the performance of ETFs and index funds. The study has done empirically since the period of their respective initiation till July 2013. The study used three parameters for the analysis of the performance such as active returns, tracking error and Jensen's alpha. The analysis shows that ETFs are performing good compare to the index mutual funds.

**M. Jayanthi, S. Malathy, T. Radhulya (2013)**, analyse the gold ETFs and compare the historical data of various gold ETFs in India. The study tracks the performance on daily, weekly, monthly, quarterly and yearly basis. The study showed that many of the gold ETFs currently available in the Indian market exhibit a large deviation from actual gold returns. This problem is more prominent in India than in developed markets.

**Hayati and Haruman (2006)** conducted a research about Comparison Analysis between the performance of Conventional and Islamic Mutual Funds as the Basis for Decision Making Knowledge for Investment in Indonesia Capital Market. Based on the results of the research's hypothesis testing related to differences between the rate of return and risk of mutual funds, it obtained significant results as follows: (a) There are differences in the level of results between equity funds, fixed income fund and 18 balanced fund(b) There is no difference between the rate of returns of sharia fixed income mutual funds and sharia balanced funds, (c) There are differences in the level of risks between equity funds, fixed income fund and balanced funds and (d) There is no difference in risks between sharia fixed income mutual funds and sharia balanced fund.

**Ramadya and Isynuwardhana, (2012)** conducted a research about The Differences of the Performance Equity Mutual Funds between Sharia and Conventional Mutual Funds, using with Sharpe, Treynor, and Jensen methods in year 2009-2010. The results showed that sharia mutual funds have better performance in Jensen and Treynor methods. While in Sharpe method, conventional mutual funds have better performance.

**Saputra (2009)** studied about different performances of sharia and conventional mutual funds, in equity, fixed income and balanced fund. From the 12 companies analysed, sharia mutual funds have better performance than the conventional one.

**Febriyanto (2011)** also studied about different performances of sharia and conventional equity mutual funds, using Treynor, Jensen, and Sharpe. The results showed that sharia mutual funds have better performance than conventional mutual funds, and sharia mutual fund performance do not differ significantly with conventional mutual funds.

## OBJECTIVES OF THE STUDY

1. To evaluate the risk and return of Nifty Index Mutual Funds in India.
2. To study the performance of Nifty Index Mutual Funds.
3. To examine the tracking error and information ratio.

## 3. RESEARCH METHODOLOGY

This analysis is based on the performance of Nifty INDEX funds. The study selected five INDEX funds for the analysis of data such as IDBI Nifty Index Fund, UTI Nifty Index Fund, HDFC Index Fund - Nifty Plan, SBI Nifty Index Fund, Tata Index Fund-Nifty Plan (G). The research problem is solved by analyzing the data in a systematic way. The main source of the information is secondary data which is suitable for the purpose of the study. The secondary data were collected from the financial report of funds. The study examines the excess return, active return, risk adjusted returns, Sharpe ratio and Treynor ratio. The period of the study was considered from 2015 to 2020.

TABLE I NIFTY INDEX FUNDS

Index fund	Benchmark
IDBI Nifty Index Fund	Nifty Sensex
UTI Nifty Index Fund	Nifty Sensex
HDFC Index Fund - Nifty Plan	Nifty Sensex
SBI Nifty Index Fund	Nifty Sensex
Tata Index Fund-Nifty Plan(G)	Nifty Sensex

#### 4. RESULT & ANALYSIS

The study has taken five open-ended Index fund to analyze the performance which were launched during the period of 2015-2020. The investment objective of the schemes is to provide returns before expenses that closely correspond to the total returns of the S&P CNX Nifty subject, to tracking errors. The performance of Index funds was measured by analysing their active returns and excess returns. The analysis showed that the Index fund considered in this study the better performance. Here (in table II) shows the characteristics of five Index funds given below

S. No.	Index Funds	Underlying Index	Launch date	Fund Type	AUM AS ON Dec, 2017(In crores)	Minimum Investment (In INR)
1	IDBI Nifty Index Fund	NIFTY	25-Jun-15	Open-ended	218	5,000
2	UTI Nifty Index Fund	NIFTY	6-Mar-05	Open-ended	716	5,000
3	HDFC Index Fund - Nifty Plan	NIFTY	17-Jul-07	Open-ended	312	5,000
4	SBI Nifty Index Fund	NIFTY	4-Feb-07	Open-ended	239	5,000
5	Tata Index Fund-Nifty Plan(G)	NIFTY	25-Feb-08	Open-ended	6.58	5,000

Excess returns are investment returns from a security or portfolio that exceeds the riskless rate on a security generally perceived to be risk free and Active return is the percentage gain or loss of an investment relative to the investment's benchmark.

TABLE III IDBI NIFTY INDEX FUND- ANNUALIZED RETURNS  
(2015 - 2020)

Year	Nifty sensex	Rm in %	NAV	Rp in %	Rf	Excess return(Rp-Rf)	Active return (Rp-Rm)
2015	5410.56	1.70	10.10	0.14	8.03	-7.89	-1.56
2016	5908.09	9.20	11.17	10.65	8.85	1.80	1.46
2017	7453.50	26.16	13.93	24.65	8.22	16.43	-1.51
2018	8298.82	11.34	15.61	12.06	7.25	4.81	0.72
2019	8138.21	-1.94	15.14	-2.98	6.34	-9.32	-1.04
2020	9,661.42	18.72	17.80	17.54	6.42	11.12	-1.18

Table III shows the excess returns and active returns of IDBI Nifty index fund during the period of 2015-2020. The scheme got highest excess return 16.43% in the period of 2017 and highest active return 0.72 in the period of 2018. And the lowest excess return is -9.32 in the period of 2019, the lowest active return is -1.56 in the period of 2015.

TABLE IV UTI NIFTY INDEX FUND- ANNUALIZED RETURNS  
(2015 - 2020)

Year	Nifty sensex	Rm in %	NAV	Rp in %	Rf	Excess return(Rp-Rf)	Active return (Rp-Rm)
2015	5410.56	1.70	33.31	0.31	8.03	-7.72	-1.40
2016	5908.09	9.20	36.85	10.64	8.85	1.79	1.45
2017	7453.50	26.16	46.06	24.99	8.22	16.77	-1.17
2018	8298.82	11.34	52.09	13.09	7.25	5.84	1.75
2019	8138.21	-1.94	51.36	-1.39	6.34	-7.73	0.55
2020	9,661.42	18.72	61.33	19.40	6.42	12.98	0.68

The table IV examined the excess returns and active returns for the UTI Nifty index fund during the period of 2015- 2020. The highest excess return is 16.77 in the period of 2017 and lowest excess return is -7.73 in the period of 2019, the highest active return is 1.75 in the period of 2018 and the lowest active return is -1.40 in the period of 2015.

TABLE V HDFC INDEX FUND NIFTY PLAN- ANNUALIZED RETURNS (2015 - 2020)

Year	Nifty sensex	Rm in %	NAV	Rp in %	Rf	Excess return(Rp-Rf)	Active return (Rp-Rm)
2015	5410.56	1.70	46.17	-0.16	8.03	-8.19	-1.86
2016	5908.09	9.20	51.16	10.80	8.85	1.95	1.60
2017	7453.50	26.16	64.26	25.61	8.22	17.39	-0.55
2018	8298.82	11.34	72.83	13.33	7.25	6.08	1.99
2019	8138.21	-1.94	71.78	-1.44	6.34	-7.78	0.49
2020	9,661.42	18.72	85.58	19.23	6.42	12.81	0.52

The table V analyzed the excess returns and active returns of HDFC index fund nifty plan during the period of 2015- 2020. Here the table shows highest excess return in the period of 2017 which is 17.39 and the lowest excess return in the period of 2015 which is -8.19, the highest active return in the period of 2018 which is 1.99 and lowest active return in the period of 2015 which is -1.86.

TABLE VI SBI NIFTY INDEX FUND- ANNUALIZED RETURNS  
(2015 - 2020)

Year	Nifty sensex	Rm in %	NAV	Rp in %	Rf	Excess return(Rp-Rf)	Active return (Rp-Rm)
2015	5410.56	1.70	45.72	0.54	8.03	-7.49	-1.17
2016	5908.09	9.20	50.46	10.37	8.85	1.52	1.18
2017	7453.50	26.16	62.55	23.95	8.22	15.73	-2.20

2018	8298.82	11.34	69.98	11.88	7.25	4.63	0.54
2019	8138.21	-1.94	68.51	-2.10	6.34	-8.44	-0.16
2020	9,661.42	18.72	81.44	18.87	6.42	12.45	0.15

The table VI analyzed the returns performance of SBI nifty index fund during the period of 2015-2020. In this table the highest excess return is 15.73 in the period of 2017 and the lowest excess return is -8.44 in the period of 2019, the highest active return is 1.18 in the period of 2016 and the lowest return is -2.20 in the period of 2017.

TABLE VII TATA INDEX FUND NIFTY PLAN (G)– ANNUALIZED RETURNS (2015 - 2020)

Year	Nifty sensex	Rm in %	NAV	Rp in %	Rf	Excess return(Rp-Rf)	Active return (Rp-Rm)
2015	5410.56	1.70	32.00	0.73	8.03	-7.30	-0.97
2016	5908.09	9.20	35.35	10.47	8.85	1.62	1.27
2017	7453.50	26.16	43.88	24.13	8.22	15.91	-2.03
2018	8298.82	11.34	49.20	12.10	7.25	4.85	0.76
2019	8138.21	-1.94	48.16	-2.11	6.34	-8.45	-0.17
2020	9,661.42	18.72	57.11	18.59	6.42	12.17	-0.12

The table VII analyzed the returns performance of TATA index fund nifty plan(G) during the period of 2015-2020. In this table the highest excess return is 15.91 in the period of 2017 and the lowest excess return is -8.45 in the period of 2019, the highest active return is 1.27 in the period of 2016 and the lowest return is -2.03 in the period of 2017.

Funds	Alpha value	Beta value	Sharpe ratio	Treynor ratio
IDBI Nifty Index Fund	-0.51	1.00	0.28	2.83
UTI Nifty Index Fund	0.36	0.98	0.36	3.71
HDFC Index Fund - Nifty Plan	0.45	0.97	0.35	3.81
SBI Nifty Index Fund	-0.37	1.03	0.31	2.99
Tata Index Fund-Nifty Plan(G)	-0.31	1.03	0.32	3.04

TABLE VIII RISK ADJUSTED RETURNS

The study further analyzed the risk-adjusted returns of the index mutual funds using Jensen's alpha (Table 8), Sharpe ratio and Treynor ratio. The study reveals that the in the case IDBI alpha was negative which shows the mutual fund scheme is not able to beat the market. In the case of SBI nifty index fund and TATA nifty index fund, which was statistically irrelevant. Among those index funds that tracked the CNX Nifty index, the HDFC Index Fund was performed best with an alpha of 0.45%, followed by the UTI Index nifty Fund with an alpha of 0.36. The analysis also showed that the beta value for all the funds, which indicates that the funds were closely correlated with their underlying index. The Sharpe ratio is positive in all the cases which are considered that the fund is acceptable. Treynor ratio also indicated the high positiveness that shows an investor has generated high returns.

TABLE IX TRACKING ERROR AND INFORMATION RATIO

Fund	Tracking Error	Information Ratio
IDBI Nifty Index Fund	1.28	-0.4
UTI Nifty Index Fund	1.32	0.24
HDFC Index Fund - Nifty Plan	1.41	0.26
SBI Nifty Index Fund	1.22	-0.23
Tata Index Fund-Nifty Plan(G)	1.19	-0.18

The tracking error also examined for the Index fund in relation to the underlying index. Fino and Gallagher (2001) proposed various techniques for measuring the tracking errors. The most usually used approach of tracking error is the standard deviation of the difference between the returns of the benchmark index and index fund. The same method was adopted in the present study. Information ratio indicates the consistency of the fund manager in generating superior risk adjusted performance. A higher information ratio shows that fund manager has delivered consistent returns over a specified period.

Table IX indicates the tracking error of the index funds with respect to their underlying index. The study found the tracking error was positive and more than 1 in all the index fund which were examined in this study. The study revealed that tracking error were not much high of all the index funds. The table also shows the information ratios which were negative for IDBI nifty index fund, SBI nifty index fund and TATA nifty index fund. HDFC nifty index fund and UTI nifty index fund had a positive information ratio. So the information ratio shows that HDFC nifty index fund and UTI nifty index fund had a better portfolio.

## 5. CONCLUSION

An Index fund is mainly a passive Mutual Fund that allows investors to purchase a pool of securities in a single transaction. When an investor purchases a quantity of an index fund or ETF, it means that the investor is purchasing a share of a portfolio that contains the securities of the underlying index. Here the study has taken five nifty index fund (IDBI nifty index fund, UTI nifty index fund, HDFC nifty index fund, SBI nifty index fund, TATA nifty index fund) to evaluate the performance. The paper analyzed the performance of index mutual fund that tracked their underlying index, the CNX Nifty index. The study also evaluated Jensen's alpha for the index fund to know whether the fund managers are able to generate excess returns and the have a look at also found out Sharpe and treynor. The study revealed the tracking errors and information ratio of index funds.

## REFERENCES

1. Sadhak H., Mutual Funds in India-Marketing Strategies and Investment Practices, new Delhi, Response Books, 2003.
2. Vaid Seema, Mutual Fund Operations in India, Varanasi, Rishi Publications, 1994.
3. Raju Venkatapathi, Mutual Funds in India-Investors' perceptions, new Delhi, Quality Publishing Company, 2000.

4. Gupta Amitabh, A Study of Investment Management, New Delhi, Anmol Publications, 2002
5. Jensen M.C., "The performance of Mutual Funds in the period 1945- 1964" Journal of Finance, Vol 23, No 2, 1968 pp 389-416.
6. Suchita Shukla, "A COMPARATIVE PERFORMANCE EVALUTION OF SELECTED MUTUAL FUNDS" ISSN (Print) 2394-1529, (Online) 2394-1537, International Journal of Science Technology & Management, Volume No.04, Special Issue No.02, February 2015.
7. Dr. Shripakashsoni, Dr. Deepali Bankapue, Mr. Mahesh Bhutada, "Comparative analysis of mutual fund schemes available at Kotak mutual fund and HDFC mutual fund", Maharashtra: International journal of research in finance and marketing, Vol. 5, Issue 4, April 2015.
8. Aashka Thakkar, "A Study of Performance Evaluation of Selected Equity Mutual Funds in India", Indian journal of applied research, ISSN – 2249-555X, Vol. 7, Issue 1, January 2017.
9. Dr. Monty Kanodia, Kiran Khinch, "Performance Evaluation of Mutual Funds in India:  
Website  
<http://www.nseindia.com/>  
<http://www.bseindia.com/>  
<http://www.sebi.gov.in/acts/mfreg96.html>

## E-Motorcycle: A solution to reduction in cost of transportation

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### **ABSTRACT**

This research covers the area of electric vehicles stanch for personal vehicle and its relevant market including the background information about the topic. The research is focusing on the research of current situation for the buyers and the less and more favourable conditions in Indian automobile industry. The principal of the report is comparative research of electric vehicle and conventional vehicles. In addition to this, the research focuses on the total cost of ownership of owning Electric vehicle instead of the conventional vehicle in the Indian market. In addition, the research assumptions are used in the formation of a questionnaire focusing on finding out about the awareness of electric vehicles among the publicity nowadays. The final statement that is going to be approved or rejected is the electric vehicles as a better alternative to the conventional vehicle in India.

**Keyword:** *Electronic motorcycle, Electronic Vehicle, plug-in, hybrid vehicles, conventional vehicles, Indian bike market*

### 1. INTRODUCTION

Energy crisis is one of the major concerns of today's world due to fast depleting resources of petrol, diesel, and natural gas. In combination with this, environmental decay is an additional factor which is contributing to the depletion of resources which is an alarming notification. Electric Bike which works on the battery that is powered by the motor is the general mode of transport for a local trip. The Electric bike which will be running on battery, the power is supplied by the motor, thereby supplying this power to drive the other gear components. The main purpose of using E-bike is that it is user-friendly, economical, and relatively cheap. The efficiency of this system is undeniable compared to conventional modes of transport.

### 2. REVIEW OF LITERATURE

A review of the relevant literature has been described as under.

Akshat Bansal & Akriti Agarwal (2018), in their research paper on "Comparison of Electric and Conventional Vehicles in Indian Market". the research focuses on the total cost of ownership of owning Electric vehicle instead of the conventional vehicle in the Indian market. The research also emphasizes on manufacturer perspective by finding out the best segment to launch an electric vehicle in India. In addition, the research assumptions are used in the formation of a questionnaire focusing on finding out about the awareness of electric vehicles among the publicity nowadays.

A. Jhunjhunwala, P. Kaur and S. Mutagekar in their research paper on "Electric Vehicles in India: A Novel Approach to Scale Electrification," in IEEE Electrification Magazine explained that over the last few years, electric vehicles (EVs) have captured the imagination of people in many parts of the world. Approximately 1.1 million passenger EVs (cars) were sold in 2017, up by about 57% from the previous years. Several nations have announced that their vehicles will be fully electric by 2025, 2030, or 2040. General Motors, Ford, Toyota, Volkswagen, and others demonstrated their EV ambitions by making major EV announcements.

Khurana A, Kumar VVR, Sidhpuria M in their research paper titled, “A Study on the Adoption of Electric Vehicles in India: The Mediating Role of Attitude” explained that various governments are encouraging people to switch to EVs by incentivizing the transition. Previous studies indicate that the high cost of the electric car, non-availability of charging infrastructure, time and range anxiety act as impediments to consumer adoption. The Government of India has given a call for ‘only Electric Vehicles’ on Road by 2030. This article is contemporary and examines the different factors that affect a consumer’s adoption of an EV.

### 3. RESEARCH METHODOLOGY

The present study is an analytical study because it deals with statistical data. The study is based on primary as well as secondary data. The primary data is collected via structured questionnaire from 141 respondents. The secondary data is collected mainly from the sources available on internet like the articles, journals and websites. Data is presented with the help of Graphs, charts and tables etc, whereas data analysis is done via excel and SPSS software. The statistical tools used are enumerated below:

1. Arithmetic mean for calculating values for the purpose of evaluation.
2. One-way ANOVA for analysis and interpretation.

### OBJECTIVES

The following are the broad objectives of this research paper:

1. To find out the market share of different e-motorcycle manufacturing companies in India.
2. To find out the factors influencing the preference for e-motorcycles.
3. To perform comparison between e-motorcycles and petrol bikes.

### HYPOTHESIS

H1 - Electric motorcycles are more suitable in current situation.

H0 - Electric motorcycles are not suitable in current situation.

H1 - Electric motorcycles are more convenient than petrol bikes.

H0 - Petrol bikes are more convenient than electric motorcycles.

### MEANING OF E-MOTOR CYCLE

An electric motorcycle (e-motorcycle) is a motorized bike with an integrated electric motor used to assist propulsion. Electric motorcycles and scooters are plug-in electric vehicles with two or three wheels. The electricity is stored on board in a rechargeable battery, which drives one or more electric motors. Electric scooters (as distinct from motorcycles) have a step-through frame. Electric motorcycles usually have a larger battery pack and can go up to 100-110km on a single charge.

### PROS AND CONS OF ELECTRIC BIKE

#### PROS:

- (i) Zero Vehicular Pollution:

Of course, this is the No.1 reason for such a massive shift to electric vehicles (EVs). They run on electric motors, and not use fossil fuels, which means they don’t let out any pollutants. In effect, the increasing adoption of EVs is being promoted to negate the major role that internal combustion-engined (ICE) vehicles have played in the world’s overall carbon emissions.

### (ii) No Maintenance:

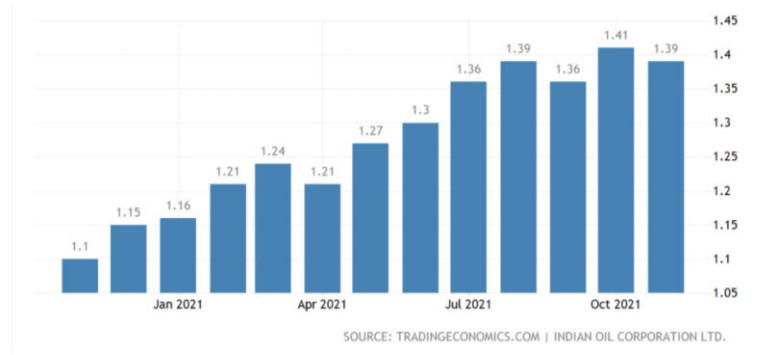
Even after months of daily driving, all that an electric two-wheeler requires is regular cleaning and the occasional lubrication. They have very few moving parts and mechanicals compared to their conventional petrol-powered bikes and scooters. Also, they don't require engine oil or air filters which are the commonly replaced components on a ICE vehicle. Hence, only basic parts need maintenance.

### (iii) No Noise:

Apart from polluting the air, conventional two-wheelers with petrol engines are quite noisy. A few actually enjoy this noise, but most would rather do away with it. With an electric two-wheeler, that is just what you can do, as the electric motor makes only a light hum even at full speed, reducing the overall noise pollution of your city.

### (iv) Cost Efficient:

Electric two-wheelers usually come with two types of cost benefits - no maintenance over time and a more stable energy source price. Since electric bikes and scooters run on electricity, they're relatively more affordable. The price of electricity does not fluctuate as frequently as that of petrol and diesel. So, you will always pay relatively less to recharge and run your electric two-wheeler. In fact, some electric two-wheelers have a running cost of 1/10th of a ICE vehicle.



Related	Last	Previous	Unit	Reference
Gasoline Prices	1.39	1.41	USD/Liter	Nov/21

Source: <https://tradingeconomics.com/india/gasoline-prices>

### (v) Government Incentives:

Various countries and governments across the world have developed frameworks and implemented laws to promote the ownership of electric two-wheelers. In India, the government provides FAME II incentives, which bring down the on-road price of an electric two-wheeler considerably.

### CONS:

#### (i) Higher Initial Investment:

Since electric two-wheelers are not as widely manufactured as their conventional cousins, their cost is still quite high. This makes EVs inaccessible for a large population, as not everyone is willing or can afford to pay the high premium. The primary reason for the high cost of electric

two-wheelers is the lithium-ion batteries, which sometimes can be 50 per cent more than the cost of the vehicle itself.

(ii) Short Range:

With the current level of battery technology, the range of an electric two-wheeler is mostly lesser than that of its conventionally powered counterpart. This coupled with the limited charging infrastructure deters EV buyers.

(iii) Not so great on performance:

Most of the premium, modern electric two-wheelers have an unimpressive top speed for the price they command. Sure, the initial acceleration is high but electric motors usually lose their steam as the speeds climb. None of the reasonably priced modern electric two-wheelers sold in India is properly highway worthy so far. Even the high-speed electric scooters on sale have a top speed in the range of 60-80kmph and are priced over Rs 1 lakh.

(iv) Charging Infrastructure:

The lack of good charging infrastructure poses a problem, particularly in developing countries such as India. Once that is taken care of, it could essentially eliminate range or future anxieties that plague electric two-wheeler owners. While growth is expected in the next few years, finding a charging point right when you need it is not as easy as finding a fuel bunk yet.

(v) Charge times:

It takes just two minutes to refuel a bike or a scooter, but charging an electric vehicle can take a couple of hours at the bare minimum. Yes, there is the advantage of quick charging tech now, which can give your EV a full charge in just about an hour. However, don't expect to find these fast chargers everywhere just yet. Moreover, not all electric two-wheelers have fast-charging capability as it puts additional strain on the battery's life. That said, a few companies have adopted swappable battery technology, which is a novel way to minimise downtime while charging and also reduce range anxiety to a certain extent.

(vi) Limited Options:

This may be a temporary concern considering the influx of EVs expected from varied manufacturers over the next couple of years. Currently, however, you can count the available options on your fingertips. Thanks to the limitation in battery technology, the range remains limited too. This is one of the reasons why most manufacturers dabble in the scooter segment rather than the motorcycle space.

#### 4. INDIAN ELECTRIC VEHICLE MARKETS OVERVIEW

The Indian Electric Vehicle Market was valued at USD 5 billion in 2020, and it is expected to reach USD 47 billion by 2026, registering a CAGR of above 44% during the forecast period (2021-2026). The Indian Electric Vehicle Market has been impacted by the outbreak of the COVID-19 pandemic due to supply chain disruptions and halt of manufacturing units due to continuous lockdowns and travel restrictions across the country. However, the electric vehicle

(EV) market is still in its nascent stage in India. It is expected to grow at a much faster rate during the forecast period due to various government initiatives and policies.



## 5. CURRENT E-BIKES AVAILABLE IN INDIAN MARKETS:

In table 1 and table 2 below, it shows that current e-bikes available in Indian market.

**Table 1: Comparison of e-Bikes**

Model	Revolt RV 400	Revolt RV 300	Ultraviolette F77	Ather 450	Ather 450X	Bajaj Chetak	TVS iQube Electric
Rated Power	3000 W	1500 W	NA	3300 W	3300 W	3800 W	NA
Max Power	NA	NA	33.5 bhp (25 kW)	5400 W	6000 W	4080 W	4400 W
Top Speed	45-85 kmph	25-65 kmph	147 kmph	80 kmph	80 kmph	78 kmph	78 kmph
Battery Capacity	3.24 kWh	2.7 kWh	4.2 kWh	2.7 kWh	2.9 kWh	3.0 kWh	4.5 kWh
Range	80-150 km	80-180 km	130-150 km	55-75 km	60-85 km	85-95 km	75 km
Charging Time	4.5 Hrs	4.2 Hrs	5 Hrs (1.5 Hrs Fast Charge)	5 Hrs (80% in 1 Hr Fast Charge)	5 Hrs (80% in 1 Hr Fast Charge)	5 Hrs	5 Hrs
Price (ex-showroom)	₹ 1,29,463	₹ 1,10,963	₹ 3,00,000	₹ 1,08,847	₹ 1,48,754	₹ 1,15,000	₹ 1,15,000

Source: <https://www.bikedekho.com/>

**Table 2 Comparison of e-Bikes**

Model	Okinawa iPraise	Hero Photon	Ampere Magnus Pro	Okinawa Ridge Plus	Ampere Zeal	Hero Optima ER	Okinawa Lite
Rated Power	1000 W	1000 W	1200 W	800 W	1200 W	600 W	250 W
Max Power	2500 W	1500 W	NA	1700 W	NA	1200 W	250 W
Top Speed	58 kmph	45 kmph	55 kmph	45 kmph	50-55 kmph	40 kmph	25 kmph
Battery Capacity	3.3 kWh	2.7 kWh	1.8 kWh	1.74 kWh	1.8 kWh	2.7 kWh	1.25 kWh
Range	160 km (Eco)	110 km (Eco)	75-80 km	84 km	85-90 km	110 km	60 km
Charging Time	4 Hrs	5 Hrs	5-6 Hrs	3 hours	5-6 Hrs	4-5 Hrs	4-5 Hrs
Price (ex-showroom)	₹ 1,23,000	₹ 84,990	₹ 73,990	₹ 73,417	₹ 68,799	₹ 74,990	₹ 63,990

Source: <https://www.bikedekho.com/>

In table 1 and table 2, it's clearly indicates that more than 10 electric bikes are available in the Indian market in current situation. The highest price is Rs.3,00,000 quoted by Ultraviolette F77 and lowest price is Rs. 63,990 quoted by Okinawa Lite.

## 6. ANALYSIS OF DATA

### COST-BENEFIT ANALYSIS OF E-BIKE AND PETROL BIKE (ASSUMPTION)

Let us assume Mr.A using ebike and Mr.B using petrol bike. The following table gives you better idea about the cost-benefit analysis between bike and petrol bike.

**Table 3**

Sr No	Particulars	e-bike	Petrol Bike
1	Buying Cost	Rs.60,000	Rs.70,000
2	Daily Running	50 km	50 km
3	Fuel efficiency/Mileage	100km per charge	40km per litre
4	Fuel/electricity cost	Rs. 14 per 1.5 units	Rs. 109 per litre
5	Maintenance	Rs. 20,000 per year	Rs. 7500 per year
6	Time period	3 years	3 years

After 3 years here is how much Mr. A and Mr. B will spend

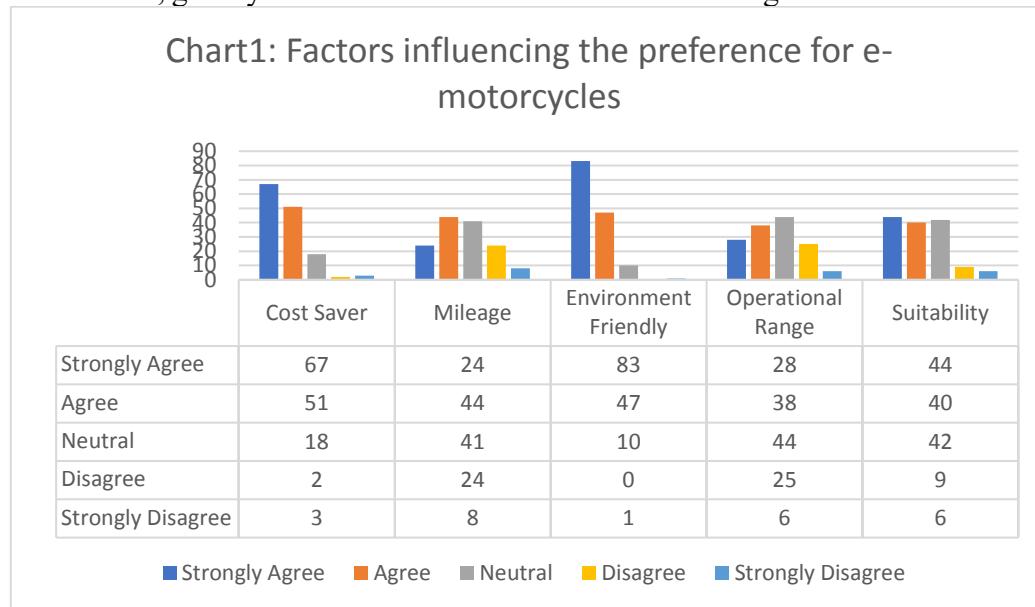
**Table 4**

Sr No	Particulars	e-bike	Petrol Bike
1	Total Petrol/electricity exp	Rs.7560	Rs.1,47,150

		$((50 \times 30 \times 36) / 100) \times 14$	$((50 \times 30 \times 36) / 40) \times 109$
2	Total Cost of maintenance	Rs.60,000	Rs.22,500
3	Gross exp including bike's cost	Rs.1,27,560	Rs.2,39,650

As per above analysis, over a period of 3 years, Mr. A will incur Rs. 1,27,560 on ebike, whereas Mr. B will incur Rs. 2,39,650 on his petrol bike. So the saving of Mr. A will be Rs. 1,12,090 for 3 years, so yearly savings of almost Rs.40,000.

Researcher collected primary data via structured questionnaire and 141 responses received. The below chart 1, gives you a better idea about factors influencing e-bikes in current situation.



Source: Author compilation

As per above chart1, 83.7% respondents agree that E-bikes are more cost saver as compared to petrol bikes. 92.2% respondents agree that E-bikes are more environmentally friendly as compared to petrol bikes. 60% respondents feel that E-bikes are more suitable to them as per the current situation.

The above data of respondents is analysed using IBM-SPSS software and One-way annova is applied as follows.

**Table 5: Factors influencing the preference for e-bikes (Descriptive Statistics)**

Users of E-Bikes	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Yes	114	10.3246	3.38789	.31730	9.6959	10.9532	5.00	21.00
No	27	12.3704	3.67055	.70640	10.9183	13.8224	6.00	25.00
Total	141	10.7163	3.52405	.29678	10.1296	11.3031	5.00	25.00

Source: Author Compilation as per IBM SPSS Software

As per Table 5, 114 respondents are using e-bikes out of 141. The mean of factors influencing the e-bikes of respondents is 10.3246. The standard deviation is 3.38789. Even though the people are not using e-bikes still they are agree that e-bikes are more suitable.

**Table 6: Factors influencing the preference for e-bikes (Anova Test)**

	Sum of Squares	df	Mean Square	F	Sig.	Table value
Between Groups	91.365	1	91.365	7.709	.006	7.71
Within Groups	1647.288	139	11.851			
Total	1738.652	140				

Source: Author Compilation as per IBM SPSS Software

As per Table 6, the one-way Anova test is applied to test the hypothesis. The annova result as given in table 6 shows that the calculated F value for hypothesis is 7.709 which is less than the Table value of 7.71. At 95% confidence level of significance is 0.05 and the F value is more than that i.e. 7.709. It is understood that electric vehicle is more suitable in the current situation. Therefore the null hypothesis i.e. Electric motorcycles are not suitable in current situation is rejected.

## 7. FINDINGS

1. The e-bikes are more cost saver as compared to petrol bikes.
2. E-bikes are more environmental-friendly which help to improve the air quality index of city like Mumbai.
3. Currently there are less availability of service station which is the main factor why people are reluctant to switch to e-bikes from petrol bikes. Still e-bikes have growth potential in the future.
4. The operational range of e-bikes is limited to short distance, however with new techniques, and development in e-bikes, the operational range will improve in the future.
5. Still there is a dilemma in the minds of petrol bike users to switch to e-bikes because of after sales services and charging related issues.

## 8. CONCLUSION

EVs are said to boost post-pandemic for economic recovery. The main aim of EVs in the country is to reduce the oil import and encourage green industrial policy. Electric vehicles will reduce the air pollution and mitigate climatic change. In order to promote usage of e-vehicles, the Indian government also provide lot of subsidies and schemes such as Faster Adoption and Manufacturing of Hybrid and Electric Vehicle (FAME scheme II). A lot of incentives are provided to the buyer such as basic subsidy, rebate, Income tax benefits under section 80EEB etc. In addition to all these incentives, all the electric vehicles are free of registration and road tax costs too. Inspite of all the efforts taken by the government, the adoption of e-bikes are relatively less. This is because of many reasons such as less availability of service stations, charging issues, after sales services, etc. Finally, in the near future, EVs will have a great future in Indian market.

## REFERENCES

1. Akshat Bansal & Akriti Agarwal (2018), "Comparison of Electric and Conventional Vehicles in Indian Market: Total Cost of Ownership, Consumer Preference and Best Segment for Electric Vehicle", published in International Journal of Science and Research, Volume 7 Issue 8, August 2018.
2. Shukla, P. R., Dhar, S., Pathak, M., & Bhaskar, K. (2014). Electric Vehicles Scenarios and a Roadmap for India. UNEP DTU Partnership

- A. Jhunjhunwala, P. Kaur and S. Mutagekar, "Electric Vehicles in India: A Novel Approach to Scale Electrification," in IEEE Electrification Magazine, vol. 6, no. 4, pp. 40-47, Dec. 2018, doi: 10.1109/MELE.2018.2871278.
4. Union of Concerned Scientists, State of Charge, 2012  
[https://www.ucsusa.org/sites/default/files/legacy/assets/documents/clean\\_vehicles/electric-car-global-warming-emissions-report.pdf](https://www.ucsusa.org/sites/default/files/legacy/assets/documents/clean_vehicles/electric-car-global-warming-emissions-report.pdf)
5. Why einkorn's report upon "Electric Vehicle Market in India 2017" [https://enincon.com/wp-content/uploads/2017/07/Flyer-EV-Market-in-India\\_enincon.pdf](https://enincon.com/wp-content/uploads/2017/07/Flyer-EV-Market-in-India_enincon.pdf)
6. Khurana A, Kumar VVR, Sidhpuria M. A Study on the Adoption of Electric Vehicles in India: The Mediating Role of Attitude. *Vision*. 2020;24(1):23-34.  
doi:10.1177/0972262919875548

## Revolutionary Approach Regarding Adoption of Fintech Industry in India

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### ABSTRACT

Financial Technology or FinTech is the new hot topic in the financial market today. It's buzzing and it's spread all over the financial industry. There has been an evolution in the FinTech industry which is led by the startups. There are a lot of challenges posed by the startups for regulators and market participants and this helps to balance the merits of innovation with the possible associated risks of the new approaches in the field of finance. The traditional methods in the financial sector are revolutionizing and changing. The term 'FinTech' is derived from the combination of Finance and Technology. The Financial Field is constantly being moulded and shaped by FinTech. Adoption of Fintech, News Network in FinTech, Structure of Fintech Industry and Fintech Startups in India, etc. are some of the analyses done through this research paper.

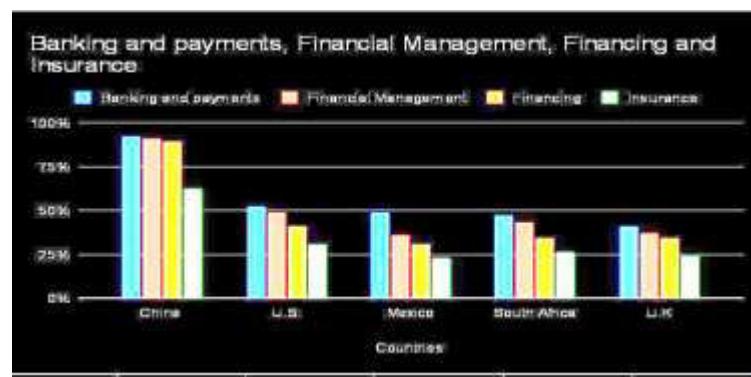
**Keywords:** *FinTech, Finance, Fintech Industry Structure, FinTech Startup, FinTech Adoption.*

### 1. INTRODUCTION

Different technologies in finance have emerged around the globe due to FinTech<sup>[1]</sup>. In order to improve the financial services, the companies and banks are adopting and using the upcoming trend in technology and this is referred to as FinTech<sup>[2]</sup>. In the past few years, there have been numerous startups who entered into the Indian FinTech industry. These startups are adding value as the industry grows with every entrance and is also gaining recognition worldwide. Out of 250 global promising startups, 20 are Indian FinTech Startups that are listed, shows the latest reports of CB<sup>[3]</sup>. We are also using FinTech services like BHIM, UPI, Payment Wallet, Digital Banking, etc. on a daily basis and this has made our life comfortable and easy. The above points therefore highlight the importance of FinTech and how the fusion of Finance and Technology can bring a revolution.<sup>[4]</sup>

### Countries with higher rate of Adoption of Fintech Industry

Graph 1 : Countries with higher rate of Adoption of Fintech Industry

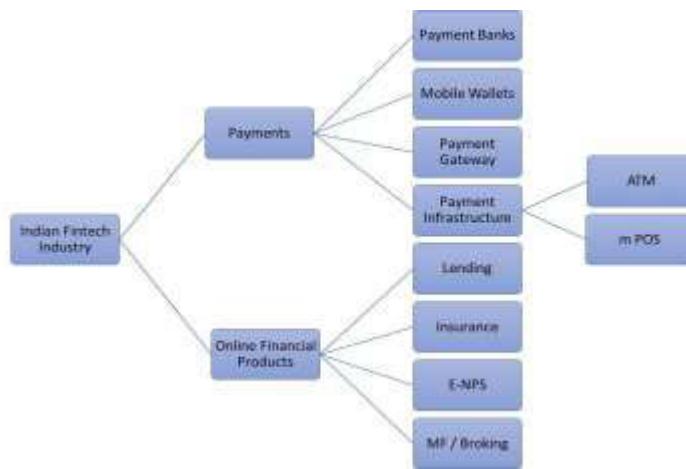


The above graph shows a representation of countries that have highly adopted the FinTech Industry. China, as can be seen, has the highest adoption rate particularly in all financial service sectors in comparison to all other countries. Followed by China, the U.S. comes number 2 when it comes to the adoption of financial technologies. Other countries, Mexico, South Africa and the U.K., more or less have the same adoption rate. India is going digital and many startups and activities are emerging under FinTech and it will not be surprising if we see India among these top FinTech companies due to its high adoption rate.

### Growth & Adoption of FinTech Industry in India

Every day, FinTech companies are setting new benchmarks for the services in the financial sector in India. Jan Dhan Yojna, Aadhaar, etc. are some of the government initiatives that are encouraging the growth of the Fintech Industry in India. Along with that, the emergence and increasing rise of services like UPI are serving as a strong base resulting to boost the financial inclusion in India. Around 88% of males and 84% of females have already adopted FinTech Applications and among them the most FinTech adopting age group is between 25 and 44 which stood around 94% of the total population whereas worldwide around 73% of the total population accounts for the same age group. Undoubtedly, India is increasingly rising towards higher adoption of Fintech making it one of the fastest growing FinTech markets across the globe. Alongside China, India ranked highest for the rate of FinTech adoption. There is an expectation of an exponential growth of 20% CAGR till 2023 while the value of digital payments were \$65 bn in 2019. Worldwide, there are different and multiple factors that influence markets, among which FinTech is a major factor. The FinTech Market is unique in India, this is because the nation has its own set of challenges and opportunities. For payment community especially, the FinTech Market is very unique<sup>[5]</sup>.

**Figure 1 : Indian FinTech Industry Structure**



### Government Initiatives in Adoption of FinTech Industry in India

The Government of India is supporting the new digital innovation brought by the FinTech Industry which has made the dream of making the country a cashless and digital economy. And hence, to push against such a revolution, GOI is making aggressive strategies at policy as well as funding level. Other regulatory bodies like RBI and SEBI are also with the GOI to promote and support the digital and Fintech Industry.

Some of the Government Initiatives are as follows:

- Creating an environment for FinTech:
  - a) Government is encouraging more and more digital transactions promoting a digital economy. Some initiatives like Jan Dhan Yojna, UPI and RBI Bharat Bill Payment, etc. are introduced.
  - b) Government is constantly working on improving internet and mobile services by introducing some initiatives like JAM(Aadhaar and Mobile), Digital India and Trai Initiatives.
  - c) Several policies and regulations are introduced for encouraging FinTech which includes Payment Bank licenses, Guidelines on P2P by RBI and Crowdfunding Regulation by SEBI.
- Promoting FinTech:
  - a) Government is promoting innovation in finance and tech by taking initiatives such as Payment System Innovation Awards by RBI, Government T-Hub, etc.
  - b) Government is also encouraging Start-ups by introducing Start-up India and ease in start-up listing norms by SEBI.

### **Revolutionary Approach to FinTech Industry in India**

New technologies are bringing a revolution in the field of Finance. Hence, FinTech is opening doors for so many opportunities for businesses and start-ups to grow. The growth can be achieved by unleashing the maximum potential to mold the sharing economy and intelligence of customers, thereby dealing with technological advancement tools such as Artificial Intelligence (AI), Blockchain, Robotics, etc.

- **Artificial Intelligence in FinTech:**  
Artificial Intelligence or AI has brought numerous opportunities for businesses and start-ups to grow. It was only after the introduction of AI, that other IT companies can also deal with the inherent quantitative nature of this tech savvy world with the availability of a good bandwidth. AI has been an absolute game changer for FinTech <sup>[8]</sup>. Customers are now offered a wide range of financial products and services and they have numerous options to choose as per their requirement. These products are also made more affordable and relevant. All these changes in the world of Finance is due to the tremendous contribution of AI which brought with it a lot of efficiency and ease to carry out tasks <sup>[9]</sup>
- **Blockchain in FinTech:**  
Blockchain development companies are benefited due to the change in Approach towards finance brought by FinTech <sup>[10]</sup>. Blockchain and cryptocurrency are bringing up the concept of virtual/digital currency to the world which is revolutionary in the world of finance. Eliminating intermediaries and widening the scope and options of investments other than traditional methods is truly bringing a change to the overall approach in Finance.
- **Cloud Computing in FinTech:**  
Along with staying in line with the regulations, companies can upscale or downscale efficiently with full control if they have Cloud Infrastructure. Cloud infrastructure therefore contributes largely towards FinTech <sup>[11]</sup>. With the use of Cloud technology and infrastructure, FinTech can sustain a constant growth, reduce CAPEX and OPEX budgets and can enhance the service portfolio and user experience. <sup>[12]</sup>
- **NLP-based chatbots**  
Mobile Banking could be reformed by employing NLP based chatbots and innovative Conversational User Interface (CUI), says PwC India. The customer can experience

better and instant responses via these chat bots which will help them give solutions to their problems thereby uplifting customer experience.

### **Evolution of Modern FinTech**

Be it for personal use or business use, any innovation that involves financial transaction is applicable to Financial Technology or FinTech. Since the existence of credit card and debit card, FinTech has been continuously disrupting the world of finance. Previously, FinTech was only pertained to back office and stock trading companies but now due to easy access to internet and mobile phones, the use and growth of FinTech has prospered. Digital world without FinTech seems incomplete now, hence it has become a crucial part. FinTech is further expected to grow with the continuous rise in technological advancements and personal or commercial finance.<sup>[16]</sup>

#### Global Evolution of Modern FinTech over the years:

It was the 1950s, when the first credit card was introduced by the Dinner's Club. Further, in the 1960s, the world's first ATM was installed by Barclays Enfield, London. Followed by that, NASDAQ introduced electronic trading in the 1970s. In the 1980s, E-trade launched the first online brokerage services. Along with this, online tele-banking was also introduced in the 1980s by the Nottingham Building Society. After that, the first online banking website in the US was introduced by the Stanford Federal Credit Union in the US in the 1990s. Paypal also made its debut in the late 1990s. Bitcoins was launched in 2009 followed by Google pay send launch which was in the 2010s. In the last decade, i.e., from 2010-2020, numerous technological advancements came into existence. Some of them were the Facial Recognition Technology 'Smile to Pay' created by Alibaba, FinTech apps like Stripe and Venmo gained popularity, and Digital-only banks or Neo banks created a disruption in the finance sector.

## **2. CONCLUSION**

FinTech delivers quick financial services by applying innovation and technology. It uses new products, technology, processes, applications, business models, problems, etc. to get the job done. FinTech can be a boon to India considering the wide range of efficiency and ease it provides for digital transactions and other services. However, there are other risk associated factors to be considered wherein the data and protection of customers is a matter of concern. To address these concerns and to ensure the safety of customers, all regulatory bodies are closely monitoring the activities in FinTech. When mobile phones penetrated India, it saw a tremendous increase in the FinTech percentage from 53% (2014) to 64% (2018). The FinTech Market in India is largely untapped as 40% of the population are not yet exposed to basic banking services while 80% of the population still deals in transactions with Cash. So, there is a huge opportunity for the FinTech Startups and Businesses to emerge in Indian Markets and build their presence!

As of now, considering the growing FinTech market, businesses and start-ups in India, the future seems bright. Although the disruptions must be dealt with extreme caution and customer protection must be prioritized. Looking at the ease, efficiency and scope, and other technological advancements dropping in like AI, ML, Robotics, etc. India can be the largest digital economy across the world in the upcoming year.

## REFERENCES

1. Kavuri, A. S., & Milne, A. (2018, August 07). Fintech and the Future of Financial Services: What are the Research Gaps? Retrieved from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3215849](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3215849)
2. Uniyal  
<https://timesnext.com/author/saumya/>, S., & Suri  
<https://timesnext.com/author/aakriti-tn/>, A. (2020, July 25). 10 Most Successful Fintech Startups & Companies in India as of 2020. Retrieved from <https://timesnext.com/10-most-successful-fintech-startups-companies-in-india/>
3. Wilson, R. (2020, September 05). 20 Most Promising Indian Fintech Startups As Per CB Insights 2020 List. Retrieved from <https://www.marketingmind.in/20-most-promising-indian-fintech-startups-as-per-cb-insights-2020-list/>
4. Ray, T. (2020, June 09). Scopes and Impact of Cloud Computing on Banking & FinTech. Retrieved from <https://www.stoodnt.com/blog/cloud-computing-banking-fintech/>
5. Hatch, M., Bull, T., Chen, S., & Hwa, G. (2019, June 03). Eight ways FinTech adoption remains on the rise. Retrieved from [https://www.ey.com/en\\_uk/financial-services/eight-ways-fintech-adoption-remains-on-the-rise#:~:text=of](https://www.ey.com/en_uk/financial-services/eight-ways-fintech-adoption-remains-on-the-rise#:~:text=of) global consumers have adopted FinTech. With global, consistent growth curve over the last five years.
6. Ashwini. (2020, December 04). Top 20 FinTech Startups of India: Fintech Companies in India. Retrieved from <https://startuptalky.com/fintech-startups-in-india/>
7. Adithya, S. (2019, June 20). India Is Quite a Different FinTech Market: Great for Consumers and Very Trying for Startups. Retrieved from <https://gomedici.com/india-is-a-different-fintech-market-great-for-consumers-and-very-trying-for-startups/>
8. Buttice, C. (2020, June 23). Top 12 AI Use Cases: Artificial Intelligence in FinTech. Retrieved from <https://www.techopedia.com/top-12-ai-use-cases-artificial-intelligence-in-fintech/2/34048>
9. Darcy Tyrrell,(2020) .Retrieved from <https://www.yodlee.com/fintech/fintech-ai>
10. Shah, P. (2019, October 30). How fintech is revolutionising with blockchain technology. Retrieved from <https://yourstory.com/2019/10/fintech-blockchain-technology>
11. Naser, A. T. (2020, March 30). The Impact Of Cloud Computing In Fintech. Retrieved from <https://vexxhost.com/blog/cloud-computing-in-fintech#:~:text= Critical Trends and Benefits Of Cloud Computing,account from a simple... 3 Security More>
12. Ray, T. (2020, June 09). Scopes and Impact of Cloud Computing on Banking & FinTech. Retrieved from <https://www.stoodnt.com/blog/cloud-computing-banking-fintech/>
13. Lee, I., & Shin, Y. J. (2017, October 09). Fintech: Ecosystem, business models, investment decisions, and challenges.
14. Kavuri, A. S., & Milne, A. (2018, August 07). Fintech and the Future of Financial Services: What are the Research Gaps? Retrieved from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3215849](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3215849)
15. Barry, E. (2020, April 26). What is Fintech? Examples, benefits and risks in 2019: Finder. Retrieved from <https://www.finder.com.au/what-is-Fintech>
16. Andre, L. (2019, October 14). What is Fintech? Examples of Types, Products & Regulations. Retrieved from <https://financesonline.com/what-is-Fintech/>
17. Singh, S. (2020, June 07). Indian Fintech Ecosystem: Four Eras of Growth and Contraction. Retrieved from <https://thedigitalfifth.com/indian-Fintech-ecosystem-four-eras-of-growth-and-contraction/>
18. Mandavia, M. (2020, February 20). Fintech investments in India nearly doubled to \$3.7 billion in 2019, says Accenture. Retrieved from <https://economictimes.indiatimes.com/small-biz/startups/newsbuzz/Fintech-investments-in-india-nearly-doubled-to-us3-7-billion-in-2019-says-accenture/articleshow/74226688.cms?from=mdr>
19. Rawat, A., & Staff, I. (2019, December 12). These Three Indian Cities Are Among Top 20 Global Fintech Hubs. Retrieved from <https://inc42.com/buzz/three-indian-cities-are-among-top-20-global-Fintech-hubs-report/>

20. Jain, N. (2018, March 16). Meet the eight fintech startups that Vizag is betting on. Retrieved from [https://yourstory.com/2018/03/meet-eight-fintech-startups-vizag-betting?utm\\_pageloadtype=scroll](https://yourstory.com/2018/03/meet-eight-fintech-startups-vizag-betting?utm_pageloadtype=scroll)
21. Golikeri, P. (2018, December 02). Advantage Fintech. Retrieved from <https://www.dnaindia.com/business/report-advantage-Fintech-2691676>
22. Saumya Uniyal <https://timesnext.com/author/saumya/>, & Aakriti Suri <https://timesnext.com/author/aakriti-tn/>. (2020, June 09). 10 Most Successful Fintech Startups & Companies in India as of 2020. Retrieved from <https://timesnext.com/10-most-successful-Fintech-startups-companies-in-india/>
23. YS, T. (2017, November 13). Fintech will be a game changer in India's socio economic landscape. Retrieved from <https://yourstory.com/2017/11/Fintech-gamechanger-india-socioeconomic-landscape>
24. Drishti IAS. (2018, October 15). The Challenges for Fintech Adoption in India. Retrieved from <https://www.drishtias.com/daily-updates/daily-news-editorials/daily-updates-news-editorials-the-challenges-for-Fintech-adoption-in-India>
25. Modi, A. (n.d.). Fintech And Its Challenges. Retrieved from <http://www.businessworld.in/article/Fintech-And-Its-Challenges/06-04-2019-168786/>

## Trending E-Commerce System in India: An Analytical Study

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### **ABSTRACT**

Information technology has boosted the world of businesses and production processes globally. Digital economy or digitisation is nothing but processes, activities, trading, transactions and interactions taking place with the help of internet digital technology. There are various digital tools involved in e-commerce. Throughout the ages digital marketing or e-Commerce has seen a revolutionary change. This change is in the process of both marketing and selling of products. Simultaneously, the change has also been witnessed in the purchasing process by the customers. There are various merchandisers and services all over the internet, which are providing the platform for online products and services from start to finish. Various software's and portals have been established for facilitating online sell and purchase. E-commerce has influenced buyers and sellers. The digital modes of financial transactions have made the payment and refunds very easy. In this case the chances of fraud have been reduced significantly.

**Keywords:** *E-Commerce, B2B, Digital Transformation, Information Technology.*

### **1. INTRODUCTION**

The digital economy was initiated in India a long time back, however it became part and parcel of the Indian economy after the announcement of the launch of the program called Digital India by Prime Minister Shri Narendra Modi on 1st July 2015 (**Aggarwal, M., 2014**). The main purpose of this programme was to make available the Digital Services to the citizens electronically and improving the infrastructure by increasing the internet connectivity. Various initiatives were launched by the government to take the initial step and make the digital platforms reach the common people (**Biswas, 2015**).

E-Commerce is an Advancement in the field of Commerce that focuses on buying and selling online. (**Browntape, 2015**). Prior to E-commerce emerging, it was even impossible to imagine that one can purchase all his requirements without stepping out of his house. E-commerce eliminates the old concept of sellers and buyers meeting at one place and their requirements are fulfilled, because now without the buyers and sellers looking at each other, just by displaying or listing the products on the web which the seller wants to sell, and the buyer by browsing through the products can make a buying decision (**Gunasekaran, 2002**). Buying has become so easy because of E-commerce.

### **2. DEFINITION OF E-COMMERCE**

“E-commerce refers to a wide range of online business activities for product and services” (**Anita Rosen, 2000**). It also pertains to “Any form of business transaction in which the parties interact electronically rather than by physical contact.” **MK, Euro Info Correspondence Centre (Belgrade, Serbia)**

E-Commerce is nothing but using the internet for marketing of the products and services. It is used through mobile and computers (**Bansal, 2012**). Several parameters are involved in it including supply chain, management, online data processing electronic Commerce, internet marketing, and data collection processes. It is using the World Wide Web along with other online portals and electronic mails. (**Aulakh, G., 2015**)

In e-commerce, the customers are using services and computer devices specially designed for receiving and placing of orders. Here, the sale and purchase of goods and services become easy. One of the important advantages of e-commerce is that the order of goods and services is done online; however, the payment of the same can be done either online or manually during the time of delivery (**Chanana, N., & Goele, S., 2012**). This transaction takes place between the individual, enterprises, households, government, suppliers, and mother related organisations (**Mishra, 2015**).

### 3. IMPORTANCE OF E-COMMERCE

E-commerce has become a very important tool in the present day world. It has become a mandate to be able to go hand in hand with the present technology, for doing so one has to join e-commerce to compete with the rest of the world (**Gupta, A., 2014**). Owners have to be constantly ready to cope up with the technological advancements and adopt them consequently. Let us discuss some of the importance of e-commerce:

**3.1 Customer Convenience:** It provides utmost convenience to the customers as they can get a variety of choices without moving out of their comfort zones, just at a click of button (**Awais, 2012**). They can also make comparisons of the same products from different online sellers and purchase the product at the most convenient prices.

**3.2 Service available for 24X7:** This is the other biggest advantage of shopping from e-commerce companies, they have the benefit to purchase the goods at their own convenience, i.e. at any hour of the day and their order will be booked and later delivered at their doorstep (**Das, 2012**).

**3.3 Connect the globe:** The e-commerce website provides services all around the globe. therefore they have the chance to reach and connect with the globe. This also results in higher turnover and success for their company.

**3.4 Catch Customers on Social Media:** Today due to the popularity of social media sites, the e-commerce companies have the scope to reach a bigger audience to sell their products. This has also given rise to additional means of advertising apart from Radio, Television, Newspapers and Magazines.

### 4. FUNCTIONS OF E-COMMERCE

Following is the function of e-commerce businesses:

a. **Registration:** Any customer who is willing to make a purchase through an e-commerce website has to undergo this important step, to register their details with the company (**Dr. Anjum Bimal, 2011**).

b. **Basket:** The basket is a very important tool that allows the customers to select the products they wish to buy from the online portal. The basket represents the shopping basket of the customers, wherein they can store all the products they wish to buy, and later on they can move to the checkout option for making payment. Apart from recognizing an order, this

software also looks into the following functions such as taxes calculation, discounting the prices, making of bill and client's delivery address, up-selling, guaranteeing client's acceptance of conditions of sale, code creation such as tracking order number, etc.,

c. **Payment:** This step helps the customers to make payment for their products through their preferred mode of payment. This method can be cash on delivery, debit card, credit card or any other preferred mode of payment available in the portal.

d. **Listing orders and customers details:** The e-commerce staff can search and sort orders by typing the details of the customers, order status, date of order, payment status etc. Orders may be printed for the purpose of shipment. (**Hiwarkar Tryambak, 2013**).

## 5. SOCIO ECONOMIC IMPACT OF DIGITIZATION

Digitization has its severe impact on the enduring value of various resources. It particularly raises the reputation of the company.

a. **Economic Impact of Digitization:** The mode of transformation of information has changed worldwide from print Media to digital media. This is particularly because of growing internet usage. In the process of digitization, various information segments get transmitted, processed, communicated and transferred, via digital network (**Jehangir, 2011**). While considering the utility aspect of any technology, its economic benefit is to be calculated at the initiative level. This benefit can be calculated in terms it's pricing, reliability, speed and simplicity usage determining the exact features of the technology. Due to digitisation, transparency and efficiency is noted not only in the initiatives of the public sector, but even the private enterprises. The amount of corruption in the global trade phenomena and maintaining the reputation of the firm can be reduced due to the digitization process (**Karakaya F., et al, 2001**). Tracking of both financial and tangible resources also becomes viable. Thus, it can be said that. Digitization has created a dramatic effect on the economy of the nation. Decision has created a mass effect on the global economy and has been adopted by almost all the nations of the world, let it be developed or developing countries. These nations, which have adopted advanced technologies of digitization tend to benefit much from its impacts.

Marketing and e-commerce have essentially widened the consumer base, including people from all the economic strata of the society. This has led to reduction of the financial matters of the company especially during the recession period, if any. Operational efficiency of the firms can be increased in this way by optimising the trade policies, advertisements of the products, etc.

b. **Impact on Employment:** Employment has boosted due to telecommunication technology in India. More of the job opportunities have been created in the software field particularly dealing with programming, Outsourcing, advertisements, blogging as also with the development of hardware devices. Medicine even in the sectors influenced by digitization including trade, Banking and Insurance, finance, communication networks, Healthcare services, etc. Economic development has particularly been possible in the last few decades because of substantial increase in the employment opportunities'. A very unique phenomenon is noted in most of the semi urban areas of the nation. The unemployed youth are being dragged into the IT field (**Khosla (2017)**).

c. **Social Impacts of Digitization:** Digitisation has a marked impact on the socialization process. The process of digitization has enabled the progress of society by linking it to modern communication and digital equipment. The main benefit in the process is that the rare stocks in terms of unique resources such as books and literature could now be available in a digital

manner, thus, enabling them to be fruitful for the usage of the future generation. Old history, culture, languages and materials could be stored in this manner and be retrieved whenever needed. Due to cultural hindrances and language barriers, earlier the information and knowledge could be restricted only to few people, however the process of digitisation has helped it reach the masses very easily.

While considering the role of digitisation and its impact on social segments, particularly in terms of online purchasing and its linkage with social development, it can be said that the availability of several products online have increased the reach of the customers. Becoming aware of the different parameters which are existing around them in their own society. The consumers are becoming desperate to take the benefit of such opportunities and try certain innovations in their day to day life. This has even opened the perception of the society to view certain factors, which influence them positively. Modern books, fashion articles, health care products and educational mechanisms are available online (**Mac, R., 2014**).

Thus, it can be concluded that digital processes have rapidly increased in the past few years, enabling social transformation and generating, processing and managing Digital information. Educational and Healthcare services have seen marked development in India due to the digitisation process (**Maheshwari 2016**).

## 6. FUTURE SCOPE AND OPPORTUNITIES FOR E-COMMERCE AND DIGITIZATION IN INDIA

a. **Scope for the retailers-** Retailers are very well benefited by The E-Commerce system. This can be useful in linking to the online distributor and even the online customers. Once the network is established, the retailer can receive the online orders directly from the customers and make the products available in stipulated time. At the same time, because of online chains, it becomes easy for the retailers to make less investments in terms of establishment. They do not have to locate workshops and retail outdoors at the convenience of the customers.

b. **Scope for the wholesalers and distributors:** In the normal retail world, the wholesalers find it difficult to cope up with the risk persisting in the market. However, e-Commerce networks are made available to them, they can directly make the producers, retailers and customers (**Mitra, 2013**). The chances of risk lowest down and simultaneously, they can track the market situation online without any discrepancy.

c. **Scope for the producers:** Manual advertisement cost a great amount for the producers. It becomes easy for the producers to sell their products and services through online portals. They can easily relate and connect to the last end user/ customer of the products and cater to their demand. Easy tracking of the demand becomes handy. At the same time, if the customers find any complaints for the products, they can communicate with the producer's directly through online mechanisms and get their products replaced. This will tell even the producers that they are somewhere going wrong in their production process, and rectification in future processes thus becomes very easy (**Nayyar, et al, 2005**).

d. **Scope for the customers:** In the modern day world, when people are severely equipped with various courses, they find it difficult to visit the retail stores and make daily purchases. At the same time, they are now techno-savvy, which have made easy usage of mobile phones, internet and other devices, including online mechanisms of bill payment. The online players need to make their significance in the markets, thus, due to growing competition they have to retain the quality of the products (**Pratik Dholakiya, 2015**). Due to these three factors, the customers are blindly switching over to E-Commerce for making their purchases.

The customers are expecting a strong linkage between the availability of the products and the rise of multimedia. The programmers are seeking to run the applications in a manner that the organisations cannot make frequent changes with the available platforms. E-Commerce is expected to enlarge production. At the same time, it will go wider in making the availability of the products instantly through the online platforms (**Numberger, et al,2005**). Virtual markets and service providers are the main basis for the existence of e-commerce in the nation. For this, the business interoperation needs to expand widely.

## 7. CONCLUSION

Today, e-commerce has become the lifeline of the youth. This itself proves the future of online companies. Many new and innovative start-ups are emerging each day. Earlier the Advertisements were only restricted to radios and television, which has now broadened to YouTube, Facebook, Instagram, Twitter etc. due to the over popularity of above mentioned social media channels, not only among the youth of today, but in all ages of the population of the world. The coverage of social media is really very significant, it covers a huge part of the population of the world. Therefore, this has also increased in the advertisements of popular e-commerce companies.

## REFERENCE

1. Aggarwal, M. (2014, November). Escalating Development of E-Commerce in India. International Journal Of Scientific Research, 3(11), 78-79.
2. Anita Rosen, The E-commerce Question and Answer Book (USA: American Management Association, 2000), 5.
3. Aulakh, G. (2015, September). Retrieved from <http://economictimes.indiatimes.com/industry/banking/finance/banking/alibaba-ant-financial-invest-about-680-million-in-paytm-up-stake-to-40/articleshow/49148651.cms>
4. Awais, M., & Samin, T. (2012, March). Advanced SWOT Analysis of E-Commerce. International Journal of Computer Science Issues, 9(2), 569-574.
5. Bansal (2012) "E-commerce in India – Present and Future". Retrieved from <http://www.iamwire.com/2012/12/e-commerce-in-india-%E2%80%93-present-and-future/> 5433 accessed on 26th July,2017 at 1:00 am.
6. Biswas (2015) "Growth and Opportunities of E-Commerce in India" Journal of Science and Management, Vol.1,Ranchi,January 2015,pp.95-100,ISSN – 2395-1060. Retrieved From [Http://www.ysmcvs.org/vol\\_1\\_issue\\_1/16%20anirban%20growth%20and%20opportunities%20of%20e%20commerce%20in%20India.pdf](http://www.ysmcvs.org/vol_1_issue_1/16%20anirban%20growth%20and%20opportunities%20of%20e%20commerce%20in%20India.pdf)
7. Browntape (2015) "What sells most in the Indian E-Commerce market". Retrieved from <http://indianonlineseller.com/2017/02/what-sells-most-in-the-indian-e-Commerce-market/>
8. Chanana, N., & Goele, S. (2012). Future of E-Commerce In India. International Journal of Computing & Business Research.
9. Das (2012) "Growing Trends of E-Commerce and its role in Consumers" buying pattern" International Journal of Marketing, Financial Services & Management Research Vol.1,Issue10,Odisha,October2012,pp.200-209,ISSN-2277 3622.
10. Das and Ara (2015) "Growth of E-Commerce in India" International Journal Of Core Engineering & Management (IJCEM),Vol.2,Issue 4,Cuttack and Rourkela, July 2015,pp.25-33,ISSN-2348-9510,ISSN- 2348-9510.
11. Dr. Anjum Bimal, Tiwari Rajesh, „Economic And Social Impacts Of E-Commerce,“ CFA International Journal Of Computing And Corporate Research, VOLUME 1 ISSUE 3 MANUSCRIPT 9 NOVEMBER 2011, ISSN- 2249-054X
12. Franco, D. C., & S. B. R. (2016). Advantages And Challenges Of E-Commerce Customers And Businesses: In Indian Perspective. International Journal of Research - GRANTHAALAYAH, 7-13.

13. Gangeshwer, D. K. (2013). E-Commerce or Internet Marketing: A Business Review from Indian Context. International Journal of u- and e- Service, Science and Technology, 6, 187-194.
14. Gunasekaran, A., Marri, H., McGaughey, R., & Nebhwani, M. (2002). E-commerce and its impact on operations management. International Journal Of Production Economics, 185-197.
15. Gupta, A. (2014, January). E-Commerce : Role Of E-Commerce In Today's Business. International Journal of Computing and Corporate Research, 4(1).
16. Hansen T. (2005). Perspectives on consumer decision making: an integrated approach, Journal of Consumer Behaviour, Vol.4:6, pp. 420-437.
17. Hernandez (2014) “India's market goes online”. Retrieved from <https://www.peoplematters.in/article/entrepreneurship-start-ups/editorial-indias-market-goes-online-6780>
18. Hiwarkar Tryambak, (2013), "E- Commerce impact on Indian Market: a Survey on social impact", International Journal of Advanced Research in Computer Engineering & Technology, Volume 2, Issue 3, March 2013, ISSN: 2278 – 1323 .
19. Jehangir, M., Dominic, P., Naseebullah, & Khan, A. (2011). Towards Digital Economy: The Development of ICT and E-Commerce in Malaysia. Modern Applied Science , 5 (2), 171-178.
20. Karakaya F., T.E. Charlton.,—Electronic Commerce: Current and Future Practices||, Managerial Finance, Vol. 27 (7), pp. 42-53, 2001
21. Khosla (2017) “E-Commerce Boom in India: Why online shopping is here to stay”.
22. Mac, R. (2014, October). Retrieved from <https://www.google.co.in/amp/www.forbes.com/sites/ryanmac/2014/10/28/softbank-bets-big-on-india-with-627-million-snapdeal-investment/amp/>
23. Maheshwari (2016) “Indian e-Commerce market to grow fastest globally over 3 years”. market-to-grow-fastest-globally-over-3-years-morgan Stanley/ articleshow/51031652.cms
24. Mishra, S. V., & Kotkar, D. S. (2015, February). A Study on Current Status of E-Commerce in India: A Comparative Analysis of Flipkart and Amazon. International Journal of Advance Research in Computer Science and Management Studies, 3(2), 133-137.
25. Mitra (2013) “E-Commerce in India-A Review” Journal of Marketing, Financial Services & Management Research International, Vol.2, No.02, Kolkata, February 2013, pp 126-132, ISSN 2277- 3622
26. MK, Euro Info Correspondence Centre (Belgrade, Serbia), “E-commerce-Factor of Economic Growth;” available from <http://www.eicc.co.yu/newspro/viewnews.cgi?newsstart3end5>
27. Nayyar (2015) “Beware India's E-Commerce Bubble”. Retrieved from <https://www.bloomberg.com/view/articles/2015-05-08/india-s-e-commerce-boom-may-turn-to-bust>

# Education 4.0

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Track 2

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## A CRISP VISION ON EDUCATION 4.0

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### ABSTRACT

Education is the powerful tool to bring any change and thereby growth in any field. However, this change can only be brought through the use of Advance technologies. Education system gets affected by any changes that happen around the world be it in the field of technology or arts or archaeology. The paper focuses on various aspect of changes in terms of version from 1.0 to 4.0, its characteristics, patterns to accomplish Education 4.0, benefits of Education 4.0 for teachers and students.

**Keywords:** Education 4.0, Pattern, Outcomes, Versionified Description.

### 1. INTRODUCTION

Change is evident and the foremost reality of life. Any type of growth is next to impossible without change. Change always comes from a way in classic to Recent trends. Here are Some classic definition of Education given by renowned personalities as presented in following diagram:



**Fig.1.Definition of Education**

From all above definitions it can be seen that education is elementary yet one of strongest tools that is bringing change to recent developments.

## 2. VERSIONIFIED DESCRIPTION OF EDUCATION

### A) Short Meaning -Nature wise

Education 1.0: Dictated.

Education 2.0:Socially constructed, usually with help of Internet access.

Education 3.0: Contextually reinvented knowledge.

Education 4.0: Built through effective individual and team driven focused innovative practices.

### B) What is the technology aspect of each Education?

Education 1.0: conducted at classroom doors.

Education 2.0: Cautiously adopted as open access.

Education 3.0: utilized everywhere for ubiquitous construction and transmission of knowledge.

Education 4.0: Always changes with the direct input of learners who acts as a major source of tech evolution in the innovation service production.

### C) How is teaching done in each version of Education?

Education 1.0: involves teaching from teachers to students

Education 2.0: involves teaching from teachers to students and students to students.

Education 3.0: involves teaching from teachers to students, students to students, students to teachers, people - technology-people.

Education 4.0: amplifies teaching by positive innovative feedback loops, creatively and ubiquitously in all phases of living, working and learning.

### D) Where does each version of Education localize?

Education 1.0: in a building

Education 2.0: in a building or online

Education 3.0: everywhere in the "creative society".

Education 4.0: in the globally networked human body.

## 3. EDUCATION 4.0 AND ITS CHARACTERISTICS

Education 4.0 is the required strategy for learning that adjusts itself with the trending fourth industrial revolution. In general, Education 4.0 is a belief that fosters intelligent thinking among its stakeholders. It assists education in different patterns, by the consumption of tools and resources that are technologically best. In other words, it means that instead of old classrooms patterns of chalk and talk students will enroll themselves through courses available on various moods portal

which in turn makes them self-reliable, independent and professional in terms of skills and ethics. There is no boundary in learning things.

#### **Characteristics of Education 4.0 as follows:**

- 1) It is scalable in nature.
- 2) It is transdisciplinary.
- 3) It provides experiential and Hands on training.
- 4) It is just in time information based rather than pre-requisite based
- 5) Here teachers act as mentors and coach.
- 6) It focuses on acquiring skills rather than on knowledge.
- 7) The assessment skill is formative and provides student with great ability to learn
- 8) Education 4.0 is a flexible source of knowledge/information and promotes personalized learning.

#### **4. PATTERNS TO BE FOLLOWED TO ACCOMPLISH EDUCATION 4.0**

**1. Speed up Remote Learning:** It will empower learning whenever, anyplace as the eLearning tools will change the general idea and will infer remote learning.

**2. Customized Learning:** It will bring the students customized with groups relying upon the abilities and explicit gifts. This implies that there will be an individual learning measure for every student aiding them in what they possess interest.

**3. Project-based Learning:** With project-based learning the students will figure out how to keep a hold and clean their abilities and figure out how to apply them over various circumstances.

**4. Field specific Experience:** With techno-logical progression, the training educational plan will add countless abilities centering human information and individual connection. This will give or guarantee more field experience information with the current courses.

**5. Data analysis:** Education 4.0 will assist the students to utilize their insight and think to inspect continuous and past examples or patterns.

**6. Change in exam pattern and assessment:** The current situation of theory based learning solely focuses on memorizing or doing rote learning programs and composing those in tests won't be the pattern any longer. It is fundamental to comprehend that the customary Q&A design and abstract sort questions just won't help later on. It implies the above exclusively won't stamp an individual, other than this more pragmatic stuff and exploratory information like tasks and field works will be added.

#### **5. EDUCATION 4.0's BENEFITS FOR TEACHERS**

Teachers symbolize makers of personality and change. Education-4.0 is an intelligence based digital revolution that benefits many stakeholders, teachers and educators. It is beneficial to teachers because they can convey information and fulfill the required needs of students. Teachers can indirectly teach students. They can promote digitalized personal learning goals through the

utilization of tools and techniques thus provides interesting learning outcomes for students and better educational outcomes. It facilitates educators with needs by providing the best methodology to facilitate work. It aims to improve performance by promoting teacher-skills and thus improve student -learning outcomes.

#### **6. EDUCATION 4.0's BENEFITS FOR STUDENTS**

For any organizational network, Students are the one who brings change to learning by properly gaining experience and knowledge provided by educators. It behaves students as beneficiaries. Students can connect with various stakeholders, teachers and management with the use of technology. Learning outcomes of students are directly related to the implementation level of Education 4.0. It is truly a game changer and improves student-learning outcomes.

#### **7. CONCLUSION**

From all the above points discussed it can be concluded that Education 4.0 is a reformary tool that has capability of bringing change and thus can help in overall development of teachers, students and country.

#### **REFERENCES**

1. KS Angler, "Effective Classroom-Management & Positive Teaching", English Language Teaching, Vol. 9, No. 1, ISSN :19164742, 2016.
2. P. Diwan, "Is Education 4.0 An Imperative for Success of 4th Industrial Revolution?", 2017.
3. AA Hussin, "Education 4.0 Made Simple: Ideas for Teaching", International Journal of Education & Literacy Studies, 2018.
4. Rasika Lawrence, Lim Fung Ching, Haslinda Abdullah, "Strengths and Weaknesses of the Education 4.0 in Higher Education Institution", International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-9 Issue-2S3, December 2019
5. <https://brainfeedmagazine.com/reinventing-learning-what-education-4-0-means-to-india/>
6. <https://www.educationworld.in/preparing-for-education-4-0/>
7. <https://blog.bitsathy.ac.in/education-4-0/>

## **LifeLong Learning: An analysis on how lifelong learning has become a desegregated part of human life.**

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### **ABSTRACT**

“Learning is the process of acquiring new understanding, knowledge, behaviors, skills, values, attitudes, and preferences.” It can take place at any age. In this rapidly changing world, as everything gets digital, one has to adopt learning as a part and parcel of his/her life. Lifelong learners look for opportunities to expand their knowledge and understanding. Learning helps a person to face day-to-day challenges in their lives. As changes are occurring instantly, an individual has to keep himself updated with these changes instead he will not be able to match with others and feel inferior. My paper is based on how lifelong learning has an impact on day to day life of people. Basic education is compulsory for everyone but beyond that at every step of our life learning is practiced.

**Keywords:** *Lifelong Learning, Digitization, day to day challenges.*

### **1. INTRODUCTION**

A person requires learning in their everyday life as digitization is taking place everywhere from doing shopping, for making bill payments, in Children Education, advanced technology is used for financial planning and many more. In every sphere of life, learning is important. For example, Smartphones. Today everyone is using Smartphones. It is a need for today. To be adaptable to the changing world it is required to be a continuous learner.

Abandon the commonly held notion that learning is for children and young adults. You graduate high school, get a university degree and consider yourself done with education. In the past, this may have been sufficient to land and keep a great job until you retire. But the concept of being a learner has shifted. No more is the concept of learning, do, and retire. To be agile and adaptable, you need to learn, do, unlearn — learn, do, rest — learn, do, unlearn — repeat. This is the cycle of a lifelong learner.

In the most basic terms, a lifelong learner is someone who keeps acquiring new skills and capabilities well past their formal education years. It involves not only studying new topics but also developing an open-minded, positive attitude about the dynamic nature of the world. Personal development continues alongside professional development.

Lifelong learners recognize the importance and joy of growth and personal development, so they never settle for what they currently know and always seek to improve and build upon their current knowledge. Lifelong learning is the development of human potential through a continuously supportive process that stimulates and empowers individuals to acquire all the knowledge, values, skills, and understandings they will require throughout their lifetimes and apply them with confidence, creativity, and enjoyment in all roles, circumstances and environments”

Lifelong learning crosses sectors, promoting learning beyond traditional schooling and throughout adult life. It covers learning at all ages and subsumes formal, non-formal and informal learning that is flexible, diverse and available at different times and in different places. It is believed that learning is neither age-bound nor classroom-bound, but it takes place throughout life and in all kinds of situations. It not only enhances social inclusion, active citizenship, and personal development, but also self-sustainability, rather than competitiveness and employability.

Learning makes a person confident and self-sufficient throughout his/her life. Learning in pre-schooling, in primary and secondary than in colleges and after that, while a person is doing the job he has to adapt skills which are required him/her to keep updated with the existing environment and for that he goes on upgrading his/her skills by continuous learning. This is all related to learning for getting an education and learning for getting a job secured but beyond that, changes also occur in our day-to-day life where not only literate but illiterate also need learning. Digitization is taking place in every section of society whether it is in education, industrial, or our day-to-day life. A person has to adapt to changes otherwise he will not be able to cope up with this changing world.

During Covid 19, all schools have started online education, a new concept of work from home has been discovered and today many companies are thinking to adapt this concept permanently. In such a situation, people were induced to learn new technologies. People started doing online shopping and for that purpose also they must know using the internet. Printing of passbooks, getting bank statements, making online payments, and any transactions related to banks are today carried out digitally. Parents had to learn the online process of education for their children. Even payment of electricity bills, water bills, phone bills are done by using apps available for that purpose on smartphones. Our life is surrounded by the digital world so it has become compulsory for every person that he must adapt lifelong learning as part and parcel of his day-to-day life.

## 2. LITERATURE REVIEW

“Lifelong learning is first and foremost about learning, with this learning occurring over the lifespan” (Cornford, 2002, p.358). Concerning the issue, Edwards, Ranson & Strain (2002, p.532) assert that “any understanding of learning that is lifelong and life-wide requires analysis of the learning that takes place outside as well as inside institutionalized, accredited participation in formal education and training”. Hager (2004) perceives lifelong learning as ineluctable for humans, and informal learning as an element of lifelong learning since learning is a continuous process. Longworth (2003) deems lifelong learning as performing things in a different manner, providing learners with the tools through which they can engage in learning in accordance with their learning styles and needs, not as teaching or training in a confined meaning. The author also offers the European Commission’s definition of lifelong learning as “all learning activity undertaken throughout life, with the aim of improving knowledge skills and competencies within a personal, civic, social and/or employment related perspective” (p.83). Jarvis (2007) suggests a broader description of lifelong learning and states that lifelong learning is a mixture of processes in a lifetime while an individual integrates cognitive, emotive and practical transformation in social situations and comes to experience a continual change.

## Objectives:

1. To learn about lifelong learning concepts.
2. To study how changes in human life are taking place instantly.
3. To analyze how learning helps to come front this changes.
4. To view the role played by digitization in LLL.

### 3. RESEARCH METHODOLOGY

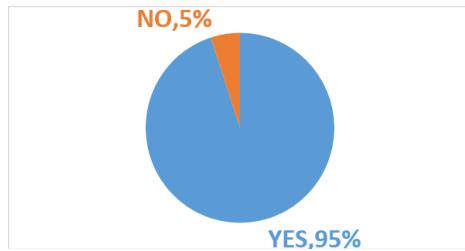
My analysis is based on Quantitative research Methodology and for that, I have used a questionnaire to draw my conclusion.

**Sample size:** I have taken samples of 300 people from Jalgaon city. They were in the age group of 30- 55 years working in various streams. The Population of Jalgaon city is near about 4.50 lakh. From 300 people 223 people responded. On that basis, I have made my analysis.

### 4. DATA ANALYSIS

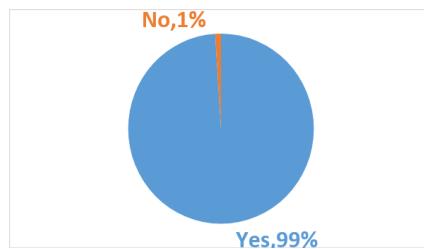
1. Do you practice lifelong learning in your Profession?

Around 95% of people said that they practice LLL in their Profession. As I have chosen people from the various stream there were people doing jobs in the education sector, in industry, in banking, some were entrepreneurs, and all stated that due to changes in teaching methods from offline to online they have to learn various online techniques like zoom meet, google meet about Microsoft teams, etc. in other sectors also digital payment method had evolved, online transactions need to be carried on so, they have to keep on learning these new concepts.



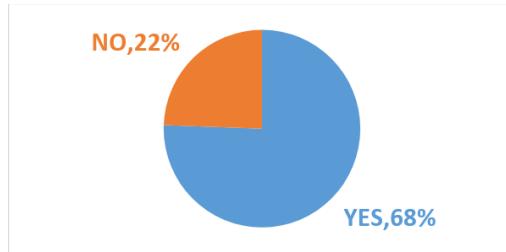
2. Do you think that LLL is connected to our day to day life?

Most of them said that LLL is connected to their day-to-day life. Some said that as they don't get time to do some of their daily work physically they do it online like banking work, doing online shopping, getting medicine, and now services like swiggy and zomato are available even in Jalgaon city, people of Jalgaon also order their food online. From carrying all this work one has to be a learner in his everyday life.



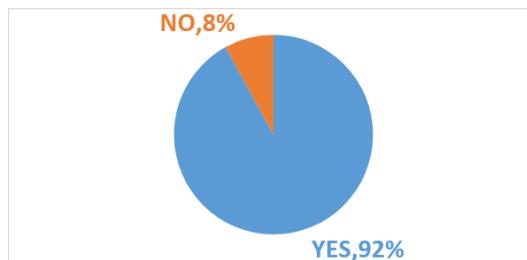
3. Does LLL go beyond Basic Education?

Here 68% said that Yes LLL is beyond basic education. In our life after completing education, there are many things which we learn from our everyday life. For some Lifelong learning means learning which starts from the age of 0-6 years and ends with retirement but around 68% people agree with my point of view that along with basic education there are many things in our life that we have to learn and which brings a change in our behavior and after retirement also that process keeps ongoing.



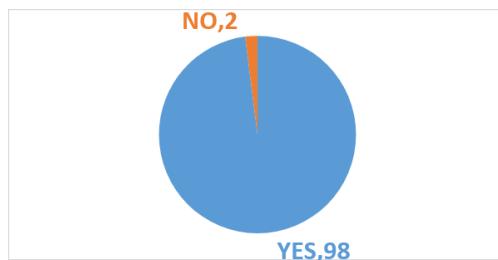
4. Are you motivated for LLL?

Motivation is a must for lifelong learning. Without motivation, a person will not be able to carry lifelong learning. As mentioned earlier, learning brought a change in the behavior of a person. He came to know new things which were not known to him earlier. So if a person is reluctant for any change he will not be a lifelong learner. So for LLL motivation is required. 92% of people said that they are motivated for LLL.

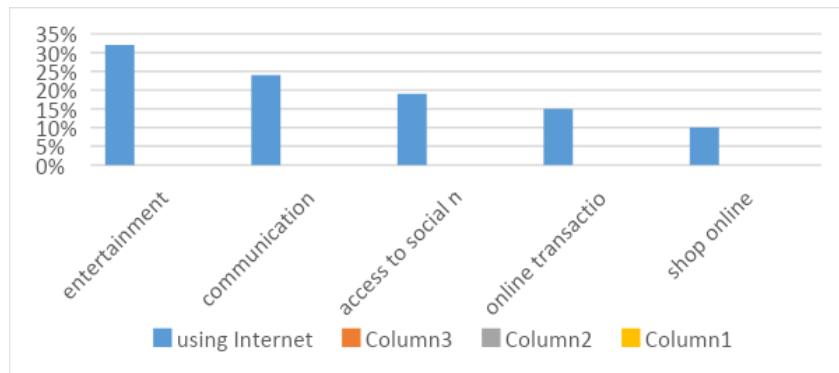


5. Do you think that Digitization and LLL are interconnected?

98% of people said yes to this question. As instant changes are taking place everywhere and there are many new things we have to learn, this is all because of digitization. Today LLL has become a need because of the digital world and therefore LLL is interconnected with digitization.



6. In your day to day life what kind of digital work you perform?

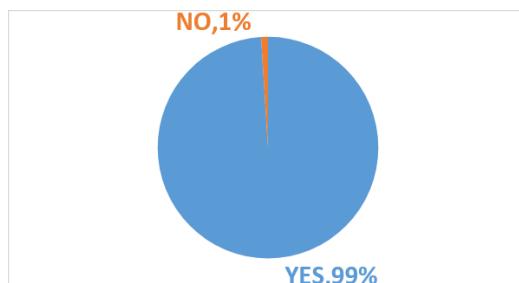


**About**

32% of users access the internet for entertainment, while 24% use it for communication and 19% to access social media platforms. About 15% have made some form of online transaction and 10% regularly shop online.

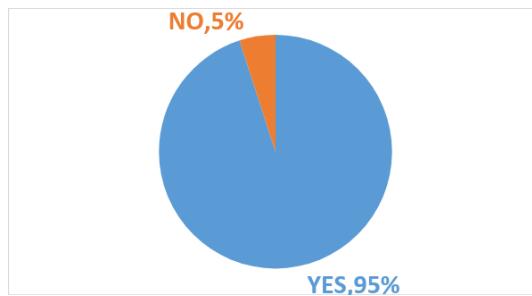
7. Do you think that LLL is needed for today?

Around 99% of people think that LLL is needed today. Some said that it is required to secure a job, others viewed that LLL is inherent in our everyday life. LLL can be in any form that is, formal, informal, or informal. Learning can be in music, dancing, cooking, and many more, and today learning is not bound to formal learning. Learning brings a change in human behavior and change can be bought anywhere and at any time. Learning starts from childhood when an infant learns by imitating their elders and continues lifelong.



8. As digitization has become involved in your day to day life, do you think that LLL has become part and parcel of your life?

Around 211 people think that LLL has become part and parcel of their life. Most people said that due to the up-gradation of technology and digital work replacing physical work in our routine life, we have to learn new things. Learning new things definitely bring changes in their lives. Today they can save time by doing their work online and can carry other work in their spare time. Children learn by using teaching apps like BYJU'S, VEDANTU etc. and other activities by using apps or YouTube. Housewives can also learn new recipes online and can become entrepreneurs. Hence digitization plays a major role in making learning an desegregated part of human life.



## 5. CONCLUSION

Lifelong learning is needed today. Today we can say that LLL is something beyond education. Completing your academics, doing the job, and then getting retired is not enough. Along with all these requirements which are necessary for our livelihood there are many things which we have to carry out in our day-to-day life and for that, it is necessary to keep on learning. Though we learn during our academic period and job, beyond that also we need to learn to carry on our everyday life and continue that learning after getting retirement also. Learning is all about change, and change drives learning. The two are inevitable and go hand in glove. A simple definition of lifelong learning is that it is “development after formal education: the continuing development of knowledge and skills that people experience after formal education and throughout their lives” so according to me one has to keep on learning beyond his/her life in order to survive in this changing world.

## REFERENCES

1. Kaplan, Aylan. 2016. Lifelong Learning: Conclusion from literature review (Journal Article). Retrieved from <https://files.eric.ed.gov/fulltext/EJ1243611.pdf>.
2. Jari Jarvela. 2017 November 17. Lifelong Learning- The case of Valamis LXP (Article). Retrieved from <https://www.valamis.com/hub/lifelong-learning>.
3. Manual London.2012 November 2012.Lifeling learning: Introduction (Article). Retrieved from <https://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780195390483.001.0001/oxfordhb-9780195390483-e-001>
4. Michael Cheary.2021. What is lifelong learning? (Article). Retrieved from <https://www.reed.co.uk/career-advice/what-is-lifelong-learning>.
5. Mandal, S. (2019) ‘The rise of lifelong learning and fall of adult education in India’. London Review of Education,17 (3): 318–330.Retrieved from <https://doi.org/10.18546/LRE.17.3.08>

## Attitude Of B.Ed. Teacher Trainees Towards Ict In Education

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### **ABSTRACT**

In the digital age, the use of information and communication technologies (ICT) has played a crucial role in education. ICT has made predominant role in the teaching-learning process. The teachers are the pioneer for initiating the positive attitude towards technology in education. Thus, teachers are in a position to update the technological knowledge and develop their skills in implementing innovative tools in education. In this context, attitude is the key factor to accept innovation in education. So, the investigator planned to study the attitude of B.Ed. trainee teachers towards ICT in education. The researcher adopted random sampling techniques and selected 250 B.Ed. teacher trainees from six colleges of education located in Virudhunagar and Madurai District. The investigator used the standardized tool of Nagy, J. & Habók, A. (2018) for the data collection. The data were analyzed using statistical techniques such as percentage analysis, mean, standard deviation, and 't' test. The findings revealed that there was no significant difference in the attitude of B.Ed. trainee teachers towards ICT in education with respect to course stream, type of institution, and residential area. Further, the study revealed that B.Ed. trainee teachers have found the same level of attitude towards the use of ICT tools in education.

**Keywords:** *Information and Communication Technology (ICT), Attitude, B.Ed. Teacher Trainees and Education.*

### 1. INTRODUCTION

Teacher education programs have the critical role to provide the necessary leadership in adapting pre-service training to teacher education to deal with the current needs of the educational society. They need to learn and practice the innovative tools for learning with the aim of enhancing the teaching-learning process. Moreover, teacher education programs must also give guidance in implementing how the new technologies can best be used in the context of the students need. The main objective of inculcating ICT in teacher education is to improve teachers' knowledge and skills through ICT integration. The second objective is to develop skills in information processing and developing learning resources. Attitude is the ability to express the ideas or opinions on something. The low quality of ICT integration in schools is the result of low attitude of teacher and teacher trainees. Thus, the teacher educational institutions act as a major role in providing

training in implementing the use of ICT in teaching learning process. Attitude towards ICT in education is to be strengthened in the academic curriculum.

## 2. NEED AND SIGNIFICANCE OF THE STUDY

Today's students live in a global and digital age. The teachers determine the future of India. Hence, the teachers and B.Ed. teacher trainees have a major responsibility in shaping the future generations in adopting digital technology. The research studies of pre-service teacher training initiatives and developments revealed that there is a strong government commitment and support towards the implementation of ICT. The importance of ICT learning to teachers is mandatory in the present scenario. Hence, teacher educators and teacher trainees require orientation towards the use of ICT in their teaching-learning process. National Curricular Framework emphasized that the use of ICT in the teaching-learning process is essential. Great learning can be enhanced through the use of New ICT tools in the classroom transaction. In this connection, all the University has incorporated ICT-related curriculum for B.Ed. trainees. It develops the attitude towards ICT in Education. Attitude is the psychological factor that determines the usage of ICT in education. If the B.Ed. teacher trainees have a positive attitude towards ICT, the better will the learning outcome in the society. Thus, the researcher is intended to study the attitude of B.Ed. trainee teachers towards ICT in education.

### Objectives

1. To find out the level of attitude of B.Ed. teacher trainees towards ICT in Education.
2. To find out whether there is any significant difference in the attitude of B.Ed. teacher trainees towards ICT in Education with regard to course stream.
3. To find out whether there is any significant difference in the attitude of B.Ed. teacher trainees towards ICT in Education with regard to type of institution.
4. To find out whether there is any significant difference in the attitude of B.Ed. teacher trainees towards ICT in Education with regard to residential area.

### Hypotheses

**H<sub>01</sub>:** There is no significant difference in attitude of B.Ed. teacher trainees towards ICT in Education with regard to course stream.

**H<sub>02</sub>:** There is no significant difference in attitude of B.Ed. teacher trainees towards ICT in Education with regard to type of institution.

**H<sub>03</sub>:** There is no significant difference in attitude of B.Ed. teacher trainees towards ICT in Education with regard to residential area.

### Delimitation

1. The study is limited to B.Ed. trainee-teachers in Madurai and Virudhunagar district only.
2. The investigator has selected only 250 students as sample for the study.

### Methodology

The investigator has used survey method in the research study.

### Population and Sample

The population for the present study consists of B.Ed. trainee-teachers studying in Colleges of Education in Madurai and Virudhunagar district. The investigators used random sampling technique. B.Ed. trainee-teachers studying in six colleges of education were randomly chosen for the study.

**Table 1**  
***Level of Attitude of B.Ed. Teacher Trainees towards ICT in Education***

Category	Low		Moderate		High	
	N	%	N	%	N	%
Attitude	31	57.23	70	73.68	149	90.13

Table 1 reveals that attitude level of B.Ed. trainee-teachers towards ICT in Education. In this level 57.23% of B.Ed. teacher trainees have low, 73.68 % of them have moderate and 90.13% of them have high level of attitude towards ICT in education.

### Tool Used

The investigator used the standardized tool of Nagy, J. & Habók, A. (2018). The research tool consists of questionnaire of 24 items.

### Analysis of Data

#### Hypothesis 1

There is no significant difference in attitude of B.Ed. teacher trainees towards ICT in Education with regard to course stream.

**Table - 2**  
***Distribution of mean score of arts and science B.Ed. trainee-teachers in their attitude towards ICT in Education***

Variable	Type of school	N	Mean	S.D	Calculated 't' value	Table value	Remarks
Course Stream	Arts	98	73.33	17.25	0.79	1.96	NS
	Science	152	73.91	16.02			

*(At 5% level of significance the table value of 't' is 1.96)*

It is inferred from the above table that the calculated t-value is 0.79 which is less than the table value. Hence the null hypothesis is accepted. So, there is no significant difference in attitude of B.Ed. trainee-teachers towards the use of ICT in education with respect to course stream.

Hence it is concluded that both arts and science B.Ed. trainee teachers have same level of attitude towards ICT in education.

#### Hypotheses 2

There is no significant difference in attitude of B.Ed. teacher trainees towards ICT in Education with regard to type of institution.

**Table - 3**  
***Distribution of mean score of Govt/Aided and private B.Ed. trainee-teachers in their attitude towards ICT in Education***

Variable	Type of school	N	Mean	S.D	Calculated 't' value	Table value	Remarks
Type of Institution	Govt/Aided	136	72.83	16.36	0.3747	1.96	NS
	Private	114	74.69	16.64			

**(At 5% level of significance the table value of 't' is 1.96)**

It is inferred from the above table that the calculated t-value is 0.3747 which is less than the table value. Hence the null hypothesis is accepted. So, there is no significant difference in attitude towards the use of ICT among B.Ed. trainee-teachers in terms of their medium of instruction.

Hence it is concluded that Tamil and English medium B.Ed. trainee teachers have same level of attitude towards ICT in education.

### Hypothesis 3

There is no significant difference in attitude of B.Ed. teacher trainees towards ICT in Education with regard to residential area.

**Table - 4**  
***Distribution of mean score of rural and urban B.Ed. trainee-teachers in their attitude towards ICT in Education***

Variable	Type of school	N	Mean	S.D	Calculated 't' value	Table value	Remarks
Residential area	Rural	115	71.28	17.30	0.332	1.96	NS
	Urban	135	75.73	15.52			

**(At 5% level of significance the table value of 't' is 1.96)**

It is inferred from the above table that the calculated t-value is 0.332 which is less than the table value. Hence the null hypothesis is accepted. So, there is no significant difference in attitude of B.Ed. teacher trainees towards ICT in Education with regard to residential area.

Hence it is concluded that both rural and urban B.Ed. trainee teachers have same level of attitude towards ICT in education.

### 3. RESULTS AND DISCUSSION

- There is no significant difference in attitude of B.Ed. teacher trainees towards ICT in Education with regard to course stream.
- There is no significant difference in attitude of B.Ed. teacher trainees towards ICT in Education in terms of their type of institution.
- There is no significant difference in the attitude of B.Ed. teacher trainees towards ICT in Education with regard to a residential area.
- Arts and Science stream B.Ed. trainee-teachers have the same level of attitude towards ICT in Education.

- Govt/Aided and private B.Ed. trainee-teachers also have the same level of attitude towards ICT in Education.
- Rural and urban B.Ed. trainee teachers have the same level of attitude towards ICT in Education.

#### 4. EDUCATIONAL IMPLICATIONS

- Teachers may implement the ICT tools in their teaching-learning process.
- Teachers may be given better opportunities to develop their technological skills.
- Group activities such as E-Quiz, group discussions, competitions, and online games may be conducted in classroom transactions by using digital tools.
- Workshop and webinar may be organized to create exposure to learning digital tools.
- Teachers may be adapted newly emerged online tools in their classroom transactions.

#### 5. CONCLUSION

The results of the study showed that there is no significant difference in the attitude of B.Ed. trainee-teachers towards ICT in education in terms of course stream, type of institution, and residential area. It is concluded that the study has found to be the same level of attitude of B.Ed. teacher trainees towards ICT in education.

#### REFERENCES

1. **Thiyagu K (2010).** Role of ICT in the Governance of Higher Education, University News, 48(48)
2. **Samson Victor R (2013).** Teacher-Trainees Attitude towards ICT. *Journal of Education and Practice*, Vol.4, No.19.
3. **Arthi, S. & Tamilselvi, B. (2016).** A study of the attitude towards ICT among B.Ed. student teachers in Namakkal District. *International Journal of Multidisciplinary Research and Development*. 3 (8), 81-84.
4. **Sekar, J.M.A. & Arul Lawrence, A.S.A (2015).** Attitude of B.Ed. students towards information and communication technology (ICT): International Journal of Applied Research. 1(8), 785-787.
5. **Meenatchii, B. (2015).** Teacher Educator's attitude towards using ICT in teaching. *Review of Research*. 4(6).
6. **Suganthi M. (2013).** Attitude of B.Ed. students towards information and communication technology. *Indian Journal of Applied Research*. 3(9):167-169.
7. **Victor R, Samson.** Teacher-trainees attitude towards ICT, *Journal of Education and Practice*. 2013; 3(19):18- 21. Retrieved from [www.iiste.org](http://www.iiste.org).

## **A Study Of Ict Used In Teaching Special Reference To Degree College Teachers**

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### **ABSTRACT**

Teaching and Learning process is undergoing a remarkable change over the ages. Traditional methods of teaching are being now modified according to the new requirements of learning and the changing world educational scenario. Modern age education has adapted itself to the various ICT techniques of teaching. This Research Paper on A Study of ICT Used in Teaching Special Reference to Degree College Teachers attempts to bring the focus on latest teaching methods inculcated with the help of ICT techniques to satisfy current educational needs. It is a comprehensive analysis of ICT Techniques used in teaching learning process. There is a balanced use of primary and secondary data for supporting the different inferences. Primary data was collected through questionnaires and personal interviews of the teachers and students whereas secondary data was collected from the e-books and websites. General Pattern of the study was to analyse Teachers and Students perspective about the Use of ICT in teaching-learning process in current educational system. This has led to conclude how far the hypothesis are confirmed.

**Keywords:** *ICT, Counsellor, Facilitator, Mentor, Coach, New Educational Scenario, New Requirements of Learning*

### **1. INTRODUCTION**

**“Gurur Brahma, Gurur Vishnu, Gurur Devo- Maheshwara**

**Gurur Sakshat Parbrahma, Tasmay Shree- Gurave Namah”**

Meaning:

The Guru is Brahma, the Guru is Vishnu, the Guru Deva is Maheswara (Shiva), The Guru is Verily the Para-Brahman (Supreme Brahman); Salutations to that Guru.

According to the above Sanskrit poetic phase the “Teacher” is considered as “Guru” which has been given the importance as that of the almighty devoted gods “Brahma, Vishnu and Mahesh ( Shiva ). So this focuses on the meaning of the term teacher and what is its importance to the students and the society. The teaching and learning process in the ancient times was very different than that which is followed in the 21<sup>st</sup> Century. The history of teaching goes back to the very ancient times even before the 10<sup>th</sup> Century. The main aim of the education in the ancient times was to provide good training to the young students in their social, economic and religious duties. The subjects of education mainly included the Vedas, Puranas and the Upanishads.

Following were the methods used in the Ancient Times in teaching and learning-

- Memorization
- Critical Analysis
- Introspection
- Story Telling
- Questions and Answers
- Practicals and Seminars

The role of the teachers and teaching methodologies undergone many changes with the changing eras. Today the Teacher cannot be just an educator which means a person making students acquainted with curriculum. The teacher has to play the different roles to make teaching and learning process very effective. It is a very dynamic and competitive business environment today. In order to be the most efficient teacher different innovative roles have to be played by the teacher. Following are some of the dynamic roles of teachers in new educational environment.

Dynamic Role of the Teacher in the new educational environment-

- Facilitator
- Coach
- Mentor
- Guide
- Counsellor
- Reflector

The technological advancements and the use of Information technology has a wider scope. The different aspects of Information technology has been used in different fields. Use of Information Technology has also extended to the educational sector with latest technological developments. Technology is the need of the day. In educational sector also in order to facilitate effective teaching, make learning interesting, and to be competitive in the new educational environment there is a need of “ **Use Of ICT in teaching**”. There is a transformation in the educational sector from traditional chalk board method to innovative methods of teaching due to Use of ICT in teaching.

ICT refers to “ Information and Communication Technology”. Today different innovative ICT tools are prescribed for matching the new educational environment and to make teaching learning process more effective. It is considered that Use of ICT in teaching is the need of the day.

Following are some of the innovative techniques for teaching with the help of ICT-

- Interactive Whiteboard
- OHP (Overhead Projector)
- Computers/Laptops
- Projector
- PowerPoint
- E-Reader(Kindle etc)
- Intranet
- Internet

## E-Books

Applications for online teaching like Google Meet, Webex, Microsoft Teams, Zoom

### 2. ORIGIN OF THE PROBLEM

At the Degree college level maximum teachers should use ICT in their day to day teaching process but unfortunately maximum teachers avoid such kind of technology in their teaching. The consequence is that students are not able to get proper knowledge of the subject and are not able to develop interest in the learning process. So the study will be conducted from Teachers perspective as well as the Students perspective to find out the effectiveness of Use Of ICT in teaching- learning process with reference to Degree College.

### 3. OBJECTIVES OF THE STUDY

- To the study the Use Of ICT in teaching with reference to Degree College Teachers
- To study the different methods of ICT used in teaching process
- To find out the general tendency of attendance of the students towards ICT lectures
- To study the Scope of ICT in teaching
- To study the impact of ICT in teaching
- To study the problems of teachers and students in Use of ICT in teaching
- To study any special suggestions/ feedback from teachers or students

### HYPOTHESIS :

H0 : The Use of ICT doesn't have a considerable impact on the Teaching- Learning Process.

H1 : The Use of ICT has a considerable impact on Teaching-Learning process and it makes teaching learning process more effective and interesting.

### 4. REVIEW OF LITERATURE

1) ICT stands for Information and Communication Technologies and are defined , for the purposes of this primer, as a “diverse set of technological tools and resources used to communicate, and to create, disseminate, store and manage information”. These technologies include computers, the Internet, broadcasting technologies ( radio and television ), and telephony- **Blurton C.**

2) ICT (information and communications technology – or technologies) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. ICTs are often spoken of in a particular context, such as ICTs in education, health care, or libraries. The term is somewhat more common outside of the United States. - **Margaret Rouse**

### Significance of the Study:

Information technology is growing very fast and it is very significant to the students for acquiring the knowledge.

- 1) The above study will focus on the students ability of learning the subjects with the help of ICT.
- 2) The study will examine the teaching skills of the teachers with the help of ICT.
- 3) The study will evaluate the effectiveness of Use Of ICT in teaching – learning process.

### Research Methodology :

- 1)Explorative Research Method is applied.
- 2)Survey method is followed.
- 3)Sample Size of the Survey is **100** respondents.
- 4)Information is collected from 5 different Degree Colleges.
- 5) 10 Degree College teachers and 10 Degree college students from each college are randomly selected.

### Collection of Data:

- ❖ Primary Data- The Primary Data in respect of the number of respondents will be obtained from the Questionnaire designed especially for this purpose.
- ❖ Secondary Data- The Secondary Data for the research study will be obtained from the References, Journals, Websites related to the educational sector.

### Data Analysis & Interpretation:

After collection of data it is tabulated and graphical representation method is used. These Statistical methods will be more suitable for finding the solutions to the problem and to achieve the objectives of the study.

Following is the Analysis of the data as collected with the help of Questionnaires. Some important questions are analyzed as per the responses from the sample respondents.

### 5. FINDINGS OF THE STUDY

- 1) 76% of the teachers make Use of ICT in teaching. This shows that teachers are more considerate towards ICT in teaching methods. Teachers are becoming innovative to get adapted to the changing educational environment and to make teaching learning process more effective.
- 2) 86% of the teachers feel that ICT is necessary in teaching methodology of new educational environment. This result focuses on the concern of the teachers towards Use of ICT in teaching. Teachers have changed their role from being a traditional teacher to a dynamic and innovative tutor to make the learning process more effective.

- 3) The study shows that the most popular technique of ICT used by most of the teachers is Power Point Presentation (PPT). About 60% of the teachers make of PPT for delivering the lectures with the help of ICT. They find this technique more effective for teaching the curriculum. Other methods like CDs, E-books are used in a very less frequency by the teachers. 22% of the Teachers use miscellaneous techniques of ICT like Intranet, Over Head Projectors (OHP), E-Reader ( Kindle ) etc for delivering lectures with the help of ICT.
- 4) Use of ICT is very essential in the changing educational environment as it is the need of the day. In order to make the teaching-learning process more effective Use Of ICT is very important in teaching methods. So the same thing is considered by the educational institutions also. The Degree Colleges provides a good support, cooperation and encouragement to the Teachers to make Use of ICT in teaching. 82% of the Degree College teachers get encouragement from their institutions for the Use of ICT in teaching.
- 5) 76% of the teachers are of the view that ICT techniques are used in the new educational environment to make teaching-learning process more effective. 24% of the teachers are of the view that ICT techniques even though they are essential are still not used in the new educational environment.

#### Testing of the Hypothesis:

From the above Survey results it is proved that the Use of ICT techniques in teaching is very essential and important and it makes the teaching-learning process very effective and interesting. It is very important for the teachers as well as for the students. It has a considerable impact on the teaching-learning process.

Thus the following **Null Hypothesis H0 is Rejected.**

**H0 :** The Use of ICT doesn't have a considerable impact on the Teaching-Learning Process.

So as per the survey results the following alternate **H1 hypothesis is accepted.**

**H1 :** The Use of ICT has a considerable impact on Teaching-Learning process and it makes teaching learning process more effective and interesting.

#### 6. LIMITATIONS OF THE STUDY

ICT is necessary and useful tool for the present generation teaching and learning process. The limitations of the study are as the following:

- Limited Sample Size
- Data is collected only from Selected colleges of Mumbai due to some constraints.
- From every Degree college Survey is conducted from only 10 teachers and 10 students which is a very restricted Sample Size of the Universe.
- Data is interpreted on the basis of the Survey conducted with the help of Questionnaires. The responses are purely personal responses.

## 7. CONCLUSIONS

ICT is very important in today's educational environment. Change is the need of the day. As the world is changing we also need to implement changes in the techniques of teaching. Today Teachers cannot follow the traditional methods of teaching. As the role of teacher has undergone changes the techniques of teaching also require modifications. As per the above conducted study it has been proved that Use of ICT in teaching is very important and relevant to make the teaching-learning process more effective and interesting

## REFERENCE

1. Lubbe, S., & Singh, S. (2009). From Conception to Demise: Implications for Users of Information Systems in Changing a Local Parastatal Educational Institution in KwaZulu-Natal, South Africa, *Handbook of Research on Strategies for Local E-Government Adoption and Implementation: Comparative Studies* (pp. 832-862).
2. Lynch, J., & Lee, K. (2012). Case Study of a New Zealand School's Use and Development of a Parent Portal, *Encyclopedia of E-Leadership, Counseling and Training* (pp. 199-211).
3. Henry, L. E., & Lee, D. (2009). Transferring Knowledge in a Knowledge-Based Economy. *Encyclopedia of Human Resources Information Systems: Challenges in e-HRM* (pp. 862-870).
4. Lundmark, E., & Westelius, A. (2008). Internet -Based Changes in Organizational Communication. *Handbook of Research on Global Diffusion of Broadband Data Transmission* (pp. 637-654).
5. Hai-Jew, S. (2011). Building Global Citizens: Empathy, the Limits of Human Nature, and First Steps towards Social Equality through E-Learning Assignments. *Handbook of Research on Transformative Online Education and Liberation: Models for Social Equality* (pp. 245-271).
6. Adedokun-Shittu, N. A., & Shittu, A. J. (2015). ICT Impact Assessment in Education. *Encyclopedia of Information Science and Technology, Third Edition* (pp. 2506-2515).
7. [www.itihhaas.com](http://www.itihhaas.com)
8. [www.itiglobal.com](http://www.itiglobal.com)
9. [www.teach.com](http://www.teach.com)
10. [www.ugc.ac.in](http://www.ugc.ac.in)

# The Impact of COVID-19 Pandemic on Education Fosters a Shift into Online Learning in India

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## ABSTRACT

The study explores the impact of the COVID-19 Pandemic on education fosters a shift into online learning in India. The breakout of COVID-19 has had a destructive effect on education in India. Utilizing online learning throughout the outbreak is the best approach to maintain one's education. The entire human population is baffled by today's modern unprecedented and unanticipated paradigm change. As the world grows more complex, so are the challenges we face. COVID-19 is now a worldwide outbreak since it has spread from country to country. Everyone, irrespective of where they come from, their degree or money, has been touched by it. Inferior residents in India have not had the same impact on the country's population overall. There is no room for laxity in schooling. Students from wealthy families who have the support of their parents may be able to pursue alternate schooling options. When schools were ordered to shut, many impoverished people remained cut off from the outside world. To provide one example, this crisis has brought to light the shortcomings of our educational institutions, which vary from a shortage of bandwidth and technology essential for online education to a resource imbalance. Ensuing in the rapid closure of schools, e-learning technologies have replaced face-to-face sessions. Due to the lack of affordability and accessibility, online learning technologies and networks for successful student learning have been thrown into the limelight. The outbreak has emphasized the need for increased training for teachers in digital technologies to stay up with today's rapidly changing educational scene. In the post-pandemic period, online learning and virtual education may play an essential role in education. Post-pandemic teaching and research methodologies must be designed by academic institutions in needed to guarantee student learning outcomes and academic standards. The author explains the impact of the COVID-19 Pandemic on education boosting online learning and its effects on the education system in India.

**Keywords:** *COVID-19 Pandemic, Education, Online Learning, Impact, and India.*

## 1. INTRODUCTION

The Pandemic of COVID-19 has affected up to 1.6 billion youngsters in 190 nations across the seven continents. Ninety-four per cent of all pupils affected by the closure of schools and other educational institutions are located in the middle- and lower-income countries. The World Health Organization labelled this disease a pandemic on March 11th, 2020, following its detection in Wuhan, China, in late December 2019. (WHO). COVID-19 had a terrible effect on education systems in both rich and developing countries, causing a global health and economic collapse (Xiang and colleagues, 2019). Education systems all through the globe were forced to close

because of the outbreak of COVID-19, which had a devastating influence on the students enrolled. Teachers and students were separated because of the contagious nature of COVID-19, which had a significant impact on their interpersonal relationships. E-learning has been replaced by this method in the absence of face-to-face interaction. During the outbreak of COVID-19, students' attitudes and readiness for E-learning systems must be examined. As an outcome of this outbreak, schools throughout the globe were promptly closed, with federal regulations to adopt social distancing to decrease overall fatality from COVID-19.

On academic campuses, where large numbers of people congregate, "social distance" or "physical separation," an essential worldwide outbreak preventative, has aimed to minimize personal communication to lower the chance of rapid spread within societies (Weeden & Cornwell, 2020). The rapid advancements in technology forced the need for educational updating. They have to be able to examine at any time and in any place. (Wolfinger, 2016). The COVID-19 virus has spread to every country and territory on the planet. As an outcome, significant advancements in education have been made throughout human history. Education, social activities, and mental health might suffer if all education systems were shut down (Odriozola-gonzalez'et al. 2020).

Throughout the world, students and educational institutions are adopting online learning technology. It's been generally accepted because of its ease of use, adaptability, and capacity to personalize the environment. There are some disadvantages to online learning, such as social isolation and a lack of connection between students and teachers (Sá, M.J.; Serpa, S; 2020). Before the current epidemic, online learning was not regarded as a reliable teaching method (Mahajan, M.V., 2020). To assist students in adapting to the pandemic challenge, several schools and institutions have begun to experiment with online learning programs. Online learning technologies are being used primarily by teachers to make their students' lives as simple as possible (Nassoura, A.B, 2020). COVID-19 Outbreak has resulted in nearly all schools across the world switching to online learning. Online -learning has never been a part of our children' lives previously. To prevent such issues in the future, our study focused on the online learning technological concerns and limitations encountered during the Pandemic in India.

### **The Impact of COVID-19 on Education in India**

In both urban and rural locations, the Indian education system is still in its infancy. 1.21 billion Students, or 69.3 per cent of all students in 188 countries, would be unable to return to school or college in May 2020, according to UNESCO figures (Grossek., 2020). Online teaching and grading are examined in this study, focusing on students attending online courses while COVID-19 occurred in India. In response to the COVID-19 outbreak, several nations, especially schools and universities, have implemented lockdown precautions. As an outcome of the COVID-19 lockdown, India's educational institutes underwent a radical shift. There has been an increase in the number of schools that prohibit pupils from possessing or using any kind of online technology. Adapting to this new baseline is makes it more challenging for teachers and students. For teachers, courses and training help them adjust their techniques to online learning and create productive lessons. In light of these closures, overseas students' educational and legal standing in their host countries were adversely affected. As an outcome, the entire network would have to shift from a face-to-face to an online learning setting. Because they were forced to respond swiftly to the instances going demands with no prior formal training, academic staff found it particularly difficult during this time frame. Students' lives were severely harmed when they were compelled to move caused by the loss of their internship. In contrast to the technology they already possessed, they needed to get newer (Kulkarni et al., 2021). Additionally, the outbreak wrought chaos in education.

This was the first time in history that students could learn from the comfort of their own homes using new technology (Zimmerman., 2020). The effectiveness of a school education that incorporates networking and approaches and educational content is a subject of discussion. The usage of digital technology in the classroom must be reimagined to improve student connections and the educational experience itself. Thousands of youngsters are unable to go to school every day because of the Pandemic. The prevalence of COVID-19 has hampered students in conflict and disaster-stricken nations. Numerous educational systems have been forced to stop lessons, examinations, internships, etc., because of the lockdown and use of online means of instruction. When a sudden and unforeseen situation caused the school to close, the instructors and pupils were bewildered and unsure about continuing. Only after the lockdown ended, everybody recognize how much they had learned about dealing with future breakouts. As an outcome of COVID, academic institutions face various challenges and possibilities to improve their computer systems. "On the other hand (Pravat, 2020). The ability to manage knowledge transfer has now been enhanced by shifting from face-to-face interaction to virtual communication, an essential innovation aspect in education institutions. This situation necessitates schools to take on issues head-on and grab new opportunities to boost innovation through innovation activities. Considering everything, we can see just how badly the public education system has indeed been impacted. As a result, there was a seismic change in educational interventions. If schools are closed due to health concerns, the World Partnerships for Learning thinks that backup arrangements must be put in place so that kids may attend the school. All individuals have the right to an education, irrespective of where they reside or how wealthy they are. Importance should be given to educating children, teens and adults in the aftermath of a natural disaster. There is still a strong emphasis on face-to-face teaching at India's educational institutions. Certain academicians already adopt online learning, which demonstrates how many will be using old ways in India.

### **The Impact of COVID- 19 on Learners**

The educational system has been rocked to its core by an unparalleled medical issue in the last few years. We have to understand better how children learn online in COVID-19. More studies need to be done to discuss the problems children face and the techniques they use to overcome them. Because of this, this study seeks to plug the hole. According to a study employing various approaches, school children have many risks with online learning. When it comes to learning new skills, they are completely uninterested. According to the data, the COVID-19 course had the most decisive influence on students' emotional wellbeing and academic achievement. Learners employed several different approaches to increase their efficiency, including requesting advice, enhancing their technical expertise, and defining goals.

Classroom education, policymaking, and continued studies are all covered in this report. Learners' educational attainment, social connections, and emotional wellbeing may suffer if all academic institutions are shut down (Odriozola-gonzalez'et al. 2020). Many learners suffer from anxiety, tension, exhaustion, a lack of excitement, abnormal sleep habits, and other bad feelings as the outcome of the recent outbreak. They are more insecure and anxious since they aren't spending more time outdoors. Students are now applicable to a wide range of technology in education. Since of their new educational environment and learning style, they are having an awful time adapting. Increasing numbers of young people are afraid that they won't be able to return to school. There were also consequences for children in the classroom. The decline in student enrollment costs countries a great deal of money. According to a study, learners tend to profit from studying abroad if they can do so from home comfort. The current situation has had a severe impact on many

students' learning. The social and communication abilities of today's youth have deteriorated due to the lack of face-to-face interaction with their classmates. Emotional and mental wellbeing suffer greatly. Skills and knowledge will decline if education levels fall. Most occupational and practical training ways fall short because of a lack of hands-on experience and experimentation to achieve their stated goals. Investing in one's education is the best way to enhance one's learning abilities in an online platform during the COVID-19 Pandemic.

### **The Impact of COVID-19 on Educators**

It is helpful to teachers who have been educated mainly in face-to-face work to teach online. The Covid-19 virus and the consequent school closings have compelled educators to go online for pupils to complete their courses. Educators, like pupils, have been impacted by the epidemic, which has raised worry levels among them. Researchers concluded that teachers were under tremendous pressure in a lockdown because of the rapid shift to online learning (Besser et al., 2020). Stress, melancholy, and sleeplessness are side effects of his home-teaching duties (NG, 2007). For educators to excel in online teaching, they must have the necessary skills, understanding, and capabilities. When COVID-19 struck in 2013, our perspective on the globe significantly shifted. After a sickness, educators often feel isolated and lonely, defined by social isolation and lockdown procedures (Smith and Lim, 2020). As an outcome of COVID-19's fast proliferation throughout the world, educators see a wide range of repercussions on all of these dimensions of their professional lives. Maintaining social isolation and reducing the transmission of contagious infection have been the primary goals of this method (Sheikh et al., 2020; Van Lancker and Parolin, 2020; Viner et al., 2020). Educators' responsibilities have increased to the point that they must deal with an extensive program and the supervision of a large number of students. Due to a shortage of online learning resources and techniques, educators of disabled students cannot satisfy their students' academic goals. It can be challenging for educators to locate and use the many platforms and educational resources available. Education has been disrupted, and this has resulted in widespread falsehoods. A co-curriculum is not possible. Educators working in traditional classrooms with technology like blackboards, chalkboards, and smartboards expressed anxiety about online learning. They intended to be prepared for the problems of the present day. Some educators were forced to hunt for work outside of the classroom after losing their jobs or seeing their pay postponed. Instructors' self-confidence suffers because of their absence of education and skills in online education.

### **The Impact on COVID-19 on Parents**

In the COVID-19 outbreak, routines have been disrupted, relationships have been altered, and child's school and leisure activity have been altered. Studies examining the impact of COVID-19 on children may benefit from a knowledge of how households cope with these shifts from parents' perspective. However, school closures and other educational disturbances may have a detrimental influence on students, but the effects may rely on how often and how well parents interact at home (Kuhfeld et al., 2020). It is conceivable that the COVID-19 outbreak could place low-income students at an increased danger of academic and behavioural issues because of differences in family involvement in their education (Kalil et al., 2012). Poorer and less educated parents may be negatively affected by the COVID-19 problem since their children always have a lower academic and emotional growth level than their more educated peers (Attanasio et al., 2020). Loneliness, hopelessness and other depressive disorders are among the lifestyles factors that contribute to a more stressful home environment for parents (Conger et al., 2002). To protect children and avoid

future pandemics, parents and caregivers need to be bolstered by academics, which might have a disastrous impact on society (Cluver et al., 2020). Unfortunately, most parents do not offer their children an atmosphere that is as conducive to learning as a traditional school. COVID-19 has resulted in job losses for several families, but online technologies also open up new opportunities. Due to a significant weak working world, many people are forced to accept employment with lesser salaries. Parental efforts to generate money for their children's online education are joint. In terms of fairness, it is vital to acknowledge the impotence of those parents who were about to observe and manage their children. It's essential to identify the effects of salary decreases and decreases in compensation systems. The economic position of those susceptible to COVID-19 and who may require additional childcare as an outcome of an outbreak is being questioned. Relationships with children and parental participation are intertwined for a healthy and happy family.

### **Online Teaching-Learning during COVID-19**

Most individuals have come to realize since COVID-19 that their current lifestyle no longer functions. Education is one of many areas that have to be enhanced throughout society as a whole. India's classrooms will be closed till March 2020 in the event of a fast-spreading pandemic. Students, parents, and teachers have disturbed their lives by an emergency lockdown as a preventive strategy. For this insoluble issue, educational establishments have implemented online learning. Change in teaching methods has offered both challenges and opportunities. People have been forced to break up because of the worldwide outbreak of Covid-19. Because people are commonly constrained to stay indoors, prolonged periods of isolation can have a detrimental effect. In this sense, online teaching-learning may play an essential role in maintaining people's interest and reducing their level of anxiety and tension. In a study, an online teaching-learning approach is in comparison to a conventional teaching approach. Online teaching-learning beats traditional classroom learning in regards to student performance. Online teaching-learning's adaptability and accessibility may benefit and damage educators and students equally. Teachers can expand the population in online education because of cutting-edge technical solutions (Appana, 2020). They involve learners in recorded and live discussions with world experts by viewing and listening to several online methods and equipment (Arkorful & Abaidoo, 2015). Many schools are now offering online teaching-learning, and many of them claim that they've already achieved 90% of their student population and have set up online services for their students. Several schools have openly acknowledged the difficulty of introducing a new teaching method because of communication and internet access issues. Several tactics have been tried since the lockdown began, including recording and disseminating teachings via social networks or the school's webpage. Learners that have access to a stable internet connection can efficiently complete their assignments, but this is not the case for most students (Ary & Brune, 2011). This type of online teaching-learning is becoming more popular among students. An online teaching-learning environment is essential to keep students and teachers interested and secure during Covid-19's lockdown time. There are several online learning portals put up by the Indian government to protect educational programmes running during the government shutdown. In online teaching-learning, many software applications are utilized to broadcast classroom information and improve student-teacher interaction. This technology enables teachers to deliver real-time teleconference to pupils, improving distance education programmes' efficacy.

For instance, online teaching-learning has been hindered by a deficiency of face to face contact and barriers in getting elevated online (Sun & Chen, 2016, Claywell et al., 2016; Arasaratnam-

Smith and Northcote, 2017; Claywell et al. 2016). Teachers must be adaptable and transformational in their approach to coping with the COVID-19 outbreak because there is no predetermined plan. Educators must come up with modified remedies for each school as the disease grows. Examine the educational standards and treatments that have emerged in various nations due to a COVID-19 outbreak. Because of this, younger people's academic programs are now being protected, and the speedy creation and execution of adaption strategies. However, there are other obstacles to overcome before they can be a good teaching-learning tool. Whenever it relates to the COVID-19 Pandemic, teachers should be confident in the technologies used by the world's best schools before they embrace online teaching-learning.

COVID-19 may benefit from online learning as a short-term remedy and a great lesson. Students should be aware of the more significant inconsistency of online teaching-learning, limiting their capacity to learn more successfully and efficiently. Students will need to improve their ability to focus and regularly concentrate when transitioning from conventional to online schooling. Many pupils may not even be allowed to use the connection or the web as an outcome of that one. Whenever it was new to online education, now is the most fantastic time to get started. The use of blended learning enables educators to work remotely while still having full access to all the resources to deliver their lessons. As a result, pandemics tend to generate disruptions in the process of teaching-learning. Emergencies, such as loss of production or outbreaks may benefit from online learning. Various online learning methodologies and tools are essential since learning is an ongoing process. The government is praised for its online learning initiatives. Utilizing an online teaching-learning environment has its advantages and disadvantages, which have all been covered in this study. Students and teachers alike are well-versed on the Online Learning program's lockdown features.

### **The Benefits of Online Learning**

Teaching in education is changing due to the rise of online teaching-learning. Due to the additional responsibilities of teaching an online class, several instructors are hesitant to do so. There may be a more significant responsibility bar for online learning than traditional education (Baran, Correia, & Thompson, 2013). Some instructors find the transition from face-to-face to online education more difficult because of the increasing expectations placed on educational technology (Murphy, Levant, Hall, & Glueckauf, 2007). According to Baran et al. (2013), online learning is distinct from classroom instruction and necessitates its technique. The following are a few benefits of online teaching-learning:

**Taking Online Classes Is Convenient and Easy:** When it comes to online teaching-learning first and most evident benefit, freedom takes the cake. Some of you may face a long trip home after a long day at work. It's hard to stop by a new site on the way home.

**Online Classes are Flexible:** You can study where ever you choose using online teaching-learning, which saves you time and lets you learn when it's most flexible for you.

**Online Classes are more Cost-Effective:** To save money, academic institutions may no longer need to rent out a physical location to conduct online courses. Changes to the system will encourage students to take more classes for less money.

**Online Classes Encouraging more interactions:** When it comes to education, many people believe that traditional classroom instruction is the most effective and beneficial way to learn. However, this is not always the case with an online class. There is, however, no rear row. Everyone could see everything that was going on from where they were standing right now. When students are frightened to speak in front of the class, they can now meet with a teacher alone.

**Online Classes, a broader range of educational options are available:** Thanks to the internet, teachers now have access to a wide range of new training options. With online classes, students may study at any time of day or night, and with teachers in any time zone, from anywhere in the world.

## 2. CONCLUSION

The COVID-19 has had a significant impact on institutes in India. Despite the challenges, there are new chances. Open and remote learning may be made accessible using modern technology, as demonstrated by COVID-19. Due to India's lack of technology resources, this is a significant issue. Sure, pupils might be able to profit from the current online teaching-learning environment. Millions of individuals might benefit from the extensive usage of the internet by India's children. A catastrophe like COVID-19 has made it imperative for colleges and universities to improve their technical and human resources capabilities immediately. As long as the COVID-19 issue persists, internet resources must be exploited to their utmost potential.

All children in India must be able to go to school throughout the COVID19 Pandemic. Online practising should be permitted after the lockout is removed. Statistical tools may be used to examine the impact of COVID-19 on India's educational infrastructure on a deeper level. Everyone on the earth is at risk from the Pandemic. The elderly haven't been the only ones to receive attention. As a condition of their high levels of stress, they are more susceptible to various health issues. As parents, we play an essential role in the lives of our children and teenagers. Keep in mind that when things are rough, be courteous and don't blame others. Schools and institutions around the country have been closed as a result of the lockdown. Children and teenagers are more prone than every age group to have a variety of psychological concerns. Watching the effects of the shutdown on much younger person's daily routines and social media will be fascinating. Depression, anxiety, and difficulty focusing and paying enough attention are just indicators that can accompany mental condition. Indian education has been severely affected by the emergence of COVID-19. In the beginning, public schools and other educational establishments were shuttered by the government. Authorities and academic institutions have said that they would begin delivering online courses within a few of weeks. When children are taught online rather than face-to-face, the teaching-learning process is slowed down. The online teaching-learning method is often regarded as a successful method of teaching in educational settings in India.

## REFERENCES

1. Arkorful, V., & Abaidoo, N. (2015). The role of e-learning, advantages and disadvantages of its adoption in higher education. *International Journal of Instructional Technology and Distance Learning*, 12(1), 29-42.
2. Arasaratnam-Smith, L. A., & Northcote, M. (2017). Community in Online Higher Education: Challenges and Opportunities. *Electronic Journal of e-Learning*, 15(2), 188-198.
3. Ary, E. J., & Brune, C. W. (2011). A comparison of student learning outcomes in traditional and online personal finance courses. *MERLOT Journal of Online Learning and Teaching*, 7(4), 465-474.
4. Baran, E., Correia, A. P., & Thompson, A. (2013). Tracing successful online teaching in higher education: Voices of exemplary online teachers. *Teachers College Record*, 115(3), 1-41.
5. Cluver, L., Lachman, J. M., Sherr, L., Wessels, I., Krug, E., Rakotomalala, S., ... & McDonald, K. (2020). Parenting in a time of COVID-19. *Lancet*, 395(10231).

6. Conger, R. D., & Conger, K. J. (2002). Resilience in Midwestern families: Selected findings from the first decade of a prospective, longitudinal study. *Journal of marriage and family*, 64(2), 361-373.
7. Di Mascio, D., Khalil, A., Saccone, G., Rizzo, G., Buca, D., Liberati, M., ... & D'Antonio, F. (2020). Outcome of coronavirus spectrum infections (SARS, MERS, COVID-19) during pregnancy: a systematic review and meta-analysis. *American journal of obstetrics & gynecology MFM*, 2(2), 100107.
8. Dobson, H., Malpas, C. B., Burrell, A. J., Gurvich, C., Chen, L., Kulkarni, J., & Winton-Brown, T. (2021). Burnout and psychological distress amongst Australian healthcare workers during the COVID-19 Pandemic. *Australasian Psychiatry*, 29(1), 26-30.
9. Fourment, M., Claywell, B. C., Dinh, V., McCoy, C., Matsen IV, F. A., & Darling, A. E. (2018). Effective online Bayesian phylogenetics via sequential Monte Carlo with guided proposals. *Systematic biology*, 67(3), 490-502.
10. Gupta, A., Madhavan, M. V., Sehgal, K., Nair, N., Mahajan, S., Sehrawat, T. S., ... & Landry, D. W. (2020). Extrapulmonary manifestations of COVID-19. *Nature medicine*, 26(7), 1017-1032.
11. Hassan, S. A., Sheikh, F. N., Jamal, S., Ezeh, J. K., & Akhtar, A. (2020). Coronavirus (COVID-19): a review of clinical features, diagnosis, and treatment. *Cureus*, 12(3).
12. Holotescu, C., Grosescu, G., Andone, D., Gunesch, L., Constandache, L., Nedelcu, V. D., ... & Dumbrăveanu, R. (2020). Romanian educational system response during the covid-19 Pandemic. In *eLearning and Software for Education Conference* (pp. 11-19).
13. Kuhfeld, M., Soland, J., Tarasawa, B., Johnson, A., Ruzek, E., & Liu, J. (2020). Projecting the potential impact of COVID-19 school closures on academic achievement. *Educational Researcher*, 49(8), 549-565.
14. Lorenz, R., Wolfinger, M. T., Tanzer, A., & Hofacker, I. L. (2016). Predicting RNA secondary structures from sequence and probing data. *Methods*, 103, 86-98.
15. Maurea, S., Mainolfi, C. G., Bombace, C., Annunziata, A., Attanasio, L., Petretta, M., ... & Cuocolo, A. (2020). FDG-PET/CT imaging during the Covid-19 emergency: a southern Italian perspective. *European Journal of Nuclear Medicine and Molecular Imaging*, 47(11), 2691-2697.
16. Mendes, A. C., Baran, E. T., Reis, R. L., & Azevedo, H. S. (2013). Self-assembly in nature: using the principles of nature to create complex nanobiomaterials. *Wiley Interdisciplinary Reviews: Nanomedicine and Nanobiotechnology*, 5(6), 582-612.
17. Murphy, M. J., Levant, R. F., Hall, J. E., & Glueckauf, R. L. (2007). Distance education in professional training in psychology. *Professional Psychology: Research and Practice*, 38(1), 97.
18. Nassoura, A. B. (2020). Measuring Students' Perceptions of Online Learning In Higher Education. *Int. J. Sci. Technol. Res*, 9, 1965-1970.
19. Ng, Y. L., Mann, V., Rahbaran, S., Lewsey, J., & Gulabivala, K. (2007). Outcome of primary root canal treatment: systematic review of the literature—part 1. Effects of study characteristics on probability of success. *International endodontic journal*, 40(12), 921-939.
20. Odriozola-González, P., Planchuelo-Gómez, Á., Irurtia, M. J., & de Luis-García, R. (2020). Psychological effects of the COVID-19 outbreak and lockdown among students and workers of a Spanish university. *Psychiatry research*, 290, 113108.
21. Odriozola-González, P., Planchuelo-Gómez, Á., Irurtia, M. J., & de Luis-García, R. (2020). Psychological symptoms of the outbreak of the COVID-19 confinement in Spain. *Journal of health psychology*, 1359105320967086.
22. Sá, M. J., & Serpa, S. (2020). The COVID-19 Pandemic as an opportunity to foster the sustainable development of teaching in higher education. *Sustainability*, 12(20), 8525.
23. Smith, B. J., & Lim, M. H. (2020). How the COVID-19 Pandemic is focusing attention on loneliness and social isolation. *Public Health Res Pract*, 30(2), 3022008.
24. Sun, A., & Chen, X. (2016). Online education and its effective practice: A research review. *Journal of Information Technology Education*, 15.

25. Thomas, W., Varley, J., Johnston, A., Symington, E., Robinson, M., Sheares, K., ... & Besser, M. (2020). Thrombotic complications of patients admitted to intensive care with COVID-19 at a teaching hospital in the United Kingdom. *Thrombosis research*, 191, 76-77.
26. Van Lancker, W., & Parolin, Z. (2020). COVID-19, school closures, and child poverty: a social crisis in the making. *The Lancet Public Health*, 5(5), e243-e244.
27. Viner, R. M., & Whittaker, E. (2020). Kawasaki-like disease: emerging complication during the COVID-19 Pandemic. *The Lancet*, 395(10239), 1741-1743.
28. Wahlang, B., Appana, S., Falkner, K. C., McClain, C. J., Brock, G., & Cave, M. C. (2020). Insecticide and metal exposures are associated with a surrogate biomarker for non-alcoholic fatty liver disease in the National Health and Nutrition Examination Survey 2003–2004. *Environmental Science and Pollution Research*, 27(6), 6476-6487.
29. Weeden, K. A., Cornwell, B., & Park, B. (2021). Still a Small World? University Course Enrollment Networks Before and During the COVID-19 Pandemic. *Sociological Science*, 8, 73-82.
30. Xiang, Y. T., Jin, Y., Wang, Y., Zhang, Q., Zhang, L., & Cheung, T. (2020). Tribute to health workers in China: A group of respectable population during the outbreak of the COVID-19. *International journal of biological sciences*, 16(10), 1739.
31. Zimmerman, S., Sloane, P. D., Katz, P. R., Kunze, M., O'Neil, K., & Resnick, B. (2020). The need to include assisted living in responding to the COVID-19 Pandemic. *Journal of the American Medical Directors Association*, 21(5), 572-575.

## Efficiency Analysis of Virtual labs on Earned Value Management

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### ABSTRACT

This paper examines the efficiency of designing virtual labs on complex topics in software project management. It also examines the efficiency of virtual labs in making the concept clear to the students in an online teaching learning environment. It helps works with students in a virtual lab setting, logistics, and methods to resolve issues. To demonstrate the feasibility of a virtual lab, a mixed-methods study consisting of quantitative surveys and qualitative data examined changes in students' confidence as measured by outcome expectations. In virtual labs, students conducted a faculty-designed project and analyzed the data. Student worksheet provided qualitative evidence of the student experience in a virtual lab. Students reported individual growth, self-learning, and appreciation of the shared group experience with a common goal.

**Keywords:** *Virtual labs, Virtual practicals, Remote experiments, Software project management, Earned value analysis*

### 1. INTRODUCTION

The concept of a virtual laboratory in the computer sciences is one with many complications. These may relate to the purpose a virtual laboratory is seeking to address, its mode of delivery, the scope of delivery, the experience of both students and tutors, and indeed the suitability of an activity for implementation in a virtual laboratory. [1] The concept also excites opinion, both for and against, in many educational circles. In this article, we will explore these concepts, and others, in the context of a particular class of virtual laboratory, the interactive screen experiment. Before embarking on detailed discussions, we must first define for ourselves what we mean by a virtual laboratory, understand what value it can bring, and importantly what it cannot (and indeed must not) do. In the most general terms, a virtual laboratory is a computer-based activity where students interact with an experimental apparatus or other activity via a computer interface. Typical examples which come to mind include a simulation of an experiment, whereby a student interacts with programmed-in behaviours, and a remote-controlled experiment where a student interacts with real apparatus via a computer link, yet the student is remote from that apparatus. We should distinguish the latter case from a computer-controlled experiment, where a student will directly control an apparatus in his or her vicinity via a computer interface. This gives us a definition of a virtual laboratory – A virtual laboratory is one where the student interacts with an experiment or activity which is intrinsically remote from the student or which has no immediate physical reality. The latter part of this definition may seem to imply that a virtual laboratory can have no physical reality behind it at all.

Virtual lab refers to a virtual teaching and learning environment aimed at developing students' laboratory skills. As one of the most important eLearning tools, they allow the student to

conduct various experiments without any constraints to place or time, in contrast to the constraints of real labs. Virtual labs incorporate various pedagogical techniques that help learners to better understand the theoretical information. These techniques include visual learning, active learning, recall-based learning, gamification & storytelling. They also offer students access to a realistic lab experience that will allow them to perform experiments and practice their skills in a risk-free and interactive learning environment. There are various categories of virtual laboratories. Virtual laboratories are not homogenous, and they largely differ in their purpose, composition, and application [6-8].

## 2. REMOTE EXPERIMENTS

In the introduction, we have discussed the definition of a virtual laboratory. It now falls to us to examine the concept of the interactive screen experiment in such a way as to distinguish it from other forms of virtual resource, and to understand the benefits interactive screen experiments can bring. In its broadest sense, we can define an interactive screen experiment as a highly interactive movie of an experiment, filmed as that experiment was being performed. By highly interactive, we do not simply mean the movie is capable of being moved forward or backward at different rates – this is trivial interactivity, and would provide minimal educational benefit. It is better perhaps to take a specific example. A screenshot of a simple interactive screen experiment illustrating the relationship between the extension of a spring and the tension in the spring.

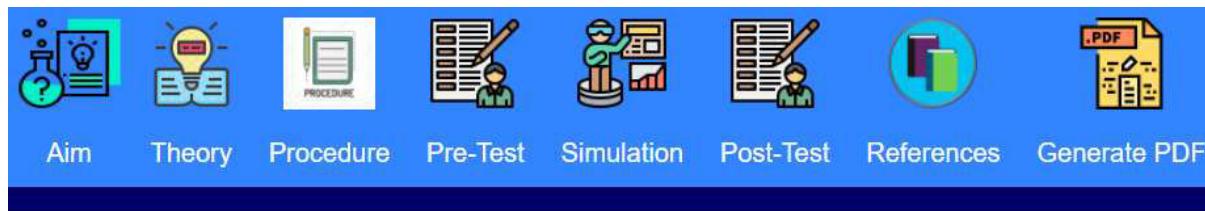
## 3. EDUCATIONAL BENEFIT

Firstly, we will examine accessibility, which may manifest itself in two ways – either students may have reduced dexterity or other attributes which limit their ability to carry through a real experiment, or they may be physically unable (due either to mobility issues or geographic location) to attend a laboratory class. [5] The benefit of an interactive screen experiment in the second case is clear. The experiment is effectively “delivered” to the student in his or her own environment, and using equipment familiar to the student. The first case is less clear, until one realises that in producing the interactive screen experiment, one is at liberty to include non-standard means of controlling the virtual apparatus. In the context of geographical location and/or mobility issues, the use of an interactive screen experiment may provide a substitution for a real experiment. This may seem like using the idea to replace real laboratories, and indeed this is true to a limited extent. We should recognise though that for the student unable to attend a real laboratory for whatever valid reason, a well-designed interactive screen experiment can provide an appropriate substitute. Moving on, a common experience of students, especially those new to experimental science, is that of entering a laboratory and being faced with the intimidatingly unfamiliar. [2-4] Although we may try to prepare students with instruction manuals and preparatory work, these approaches cannot address the fundamental “newness” of the laboratory experience. Closely focused interactive screen experiments can yield significant benefit here through providing training and practice in the use of instrumentation, apparatus and techniques [9,10].

## 4. WORKING

This section describes the working of vlabs on Earned value management. This is complicated topic in software project management. This topic can be simplified with use of virtual labs. The main page contains the Aim of the experiment, Theory and Procedure. It also Pre-test, Simulation, Post-test, References and Generate PDF. The aim of the experiment is made clear

with the Aim page. Students can read the Aim and Theory behind the experiment in the Theory page.



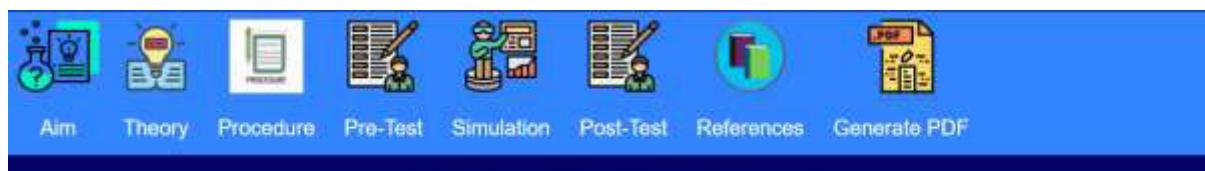
## Earned Value Management

**Aim: Using Earned Value Management to Monitor Project Performance.**

**Broad Goal of the experiment:**

- Students will be able to Focus on project performance measurement.
- Students will get a Realistic snapshot of project status.
- Students will have Opportunity to correct the issues.

The procedure of the experiment is explained in the Procedure page.



## Earned Value Management

### Procedure:

1. There are two parts in this experiment.
2. In Part 1, Use the Simulator by clicking on the link: <https://demonstrations.wolfram.com/EarnedValueManagement/>
3. Part 2 Adjust the Earned Value (EV) and Actual Cost (AC) such that the Estimate at completion (EAC) is almost equal to Planned Value (PV). Estimate at completion (EAC): • CPI can be used to produce new cost estimate • Budget at completion (BAC) – current budget allocated to total costs of project • Estimate at completion (EAC) – updated estimate = BAC/CPI

The image shows a simulation interface with three horizontal sliders. The top slider is labeled 'multiplier to change historic:'. The middle slider is labeled 'EV values' and has a value of 1. The bottom slider is labeled 'AC values' and has a value of 1.5. Below the sliders is a text input field labeled 'give EAC at period:' with a value of 21.

Students are required to study and understand the Procedure page as they need to perform the experiments as per the procedure.

A pre-test is conducted based on the knowledge gained by the student and the score is recorded.



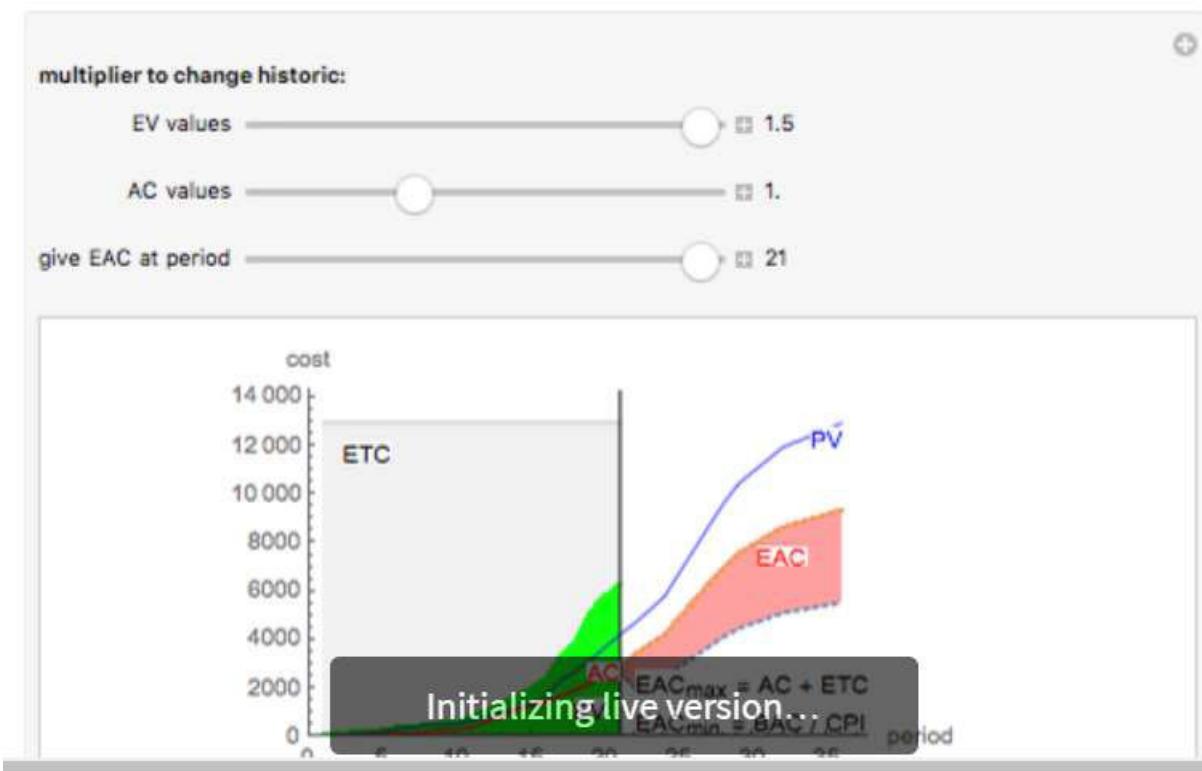
## Earned Value Management

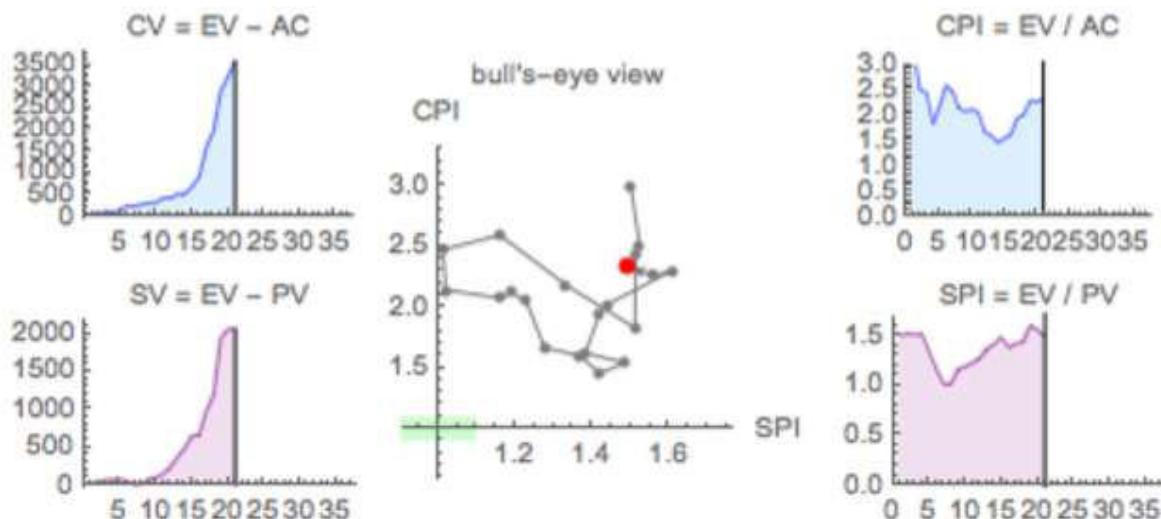
Solve these questions

1. In Earned Value Management, PV means \_\_\_\_\_.  
 a: Profit Value.  
 b: Projected Value.  
 c: Processing value.  
 d: Planned Value.
2. The budgeted cost for all activities in the project with the help of earned value method is defined by \_\_\_\_\_.  
 a: Actual cost.  
 b: budget at completion.  
 c: estimate at completion.  
 d: planned value.
3. Earned value management introduces a method to answer how much has been \_\_\_\_\_.  
 a: left.  
 b: achieved.

Students can analyse the graph and adjust the values of Earned value (EV) and Actual cost (AC). They can find the Estimated budget at completion of the project.

# Earned Value Management





The Post-test and references was provided for further reading and enhancing the knowledge on Earned value management.

**Post-Test:**

**Task:**

Schedule Performance Index (SPI) calculation:  $SPI = EV/PV$  SPI measures progress achieved against progress planned. An SPI value  $<1.0$  indicates less work was completed than was planned. SPI  $>1.0$  indicates more work was completed than was planned. Cost Performance Index (CPI) calculation:  $CPI = EV/AC$

CPI measures the value of work completed against the actual cost. A CPI value  $<1.0$  indicates costs were higher than budgeted. CPI  $>1.0$  indicates costs were less than budgeted.

For both SPI and CPI,  $>1$  is good, and  $<1$  is bad. Note that if you're in a hurry, for both cost and schedule, you can subtract instead of dividing to get the variance. Schedule variance =  $EV-PV$ , and cost variance =  $EV-AC$ . Subtracting can quickly be done in your head, and for these cases,  $>0$  is good, and  $<0$  is bad. But unlike SPI and CPI, variance cannot be effectively compared across projects or over time, where the budget for a project may have changed, because they're relative to the size of the project.

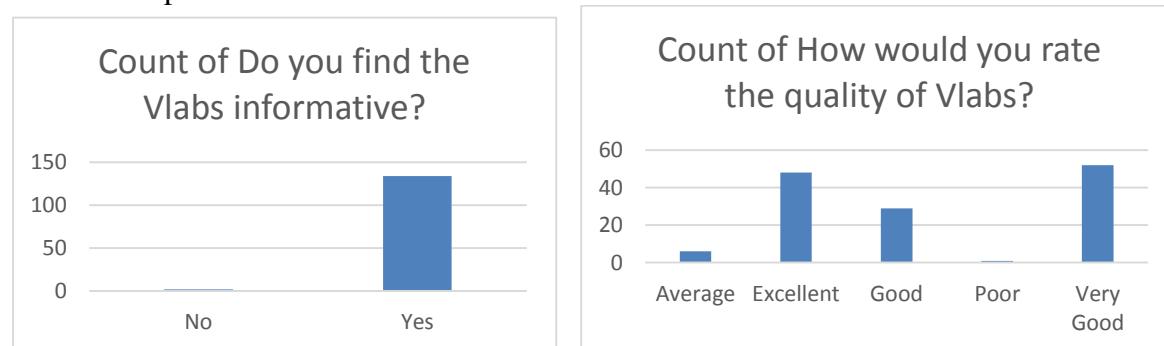
Estimated at Completion (EAC) calculation:  $EAC = (\text{Total Project Budget})/CPI$  EAC is a forecast of how much the total project will cost.

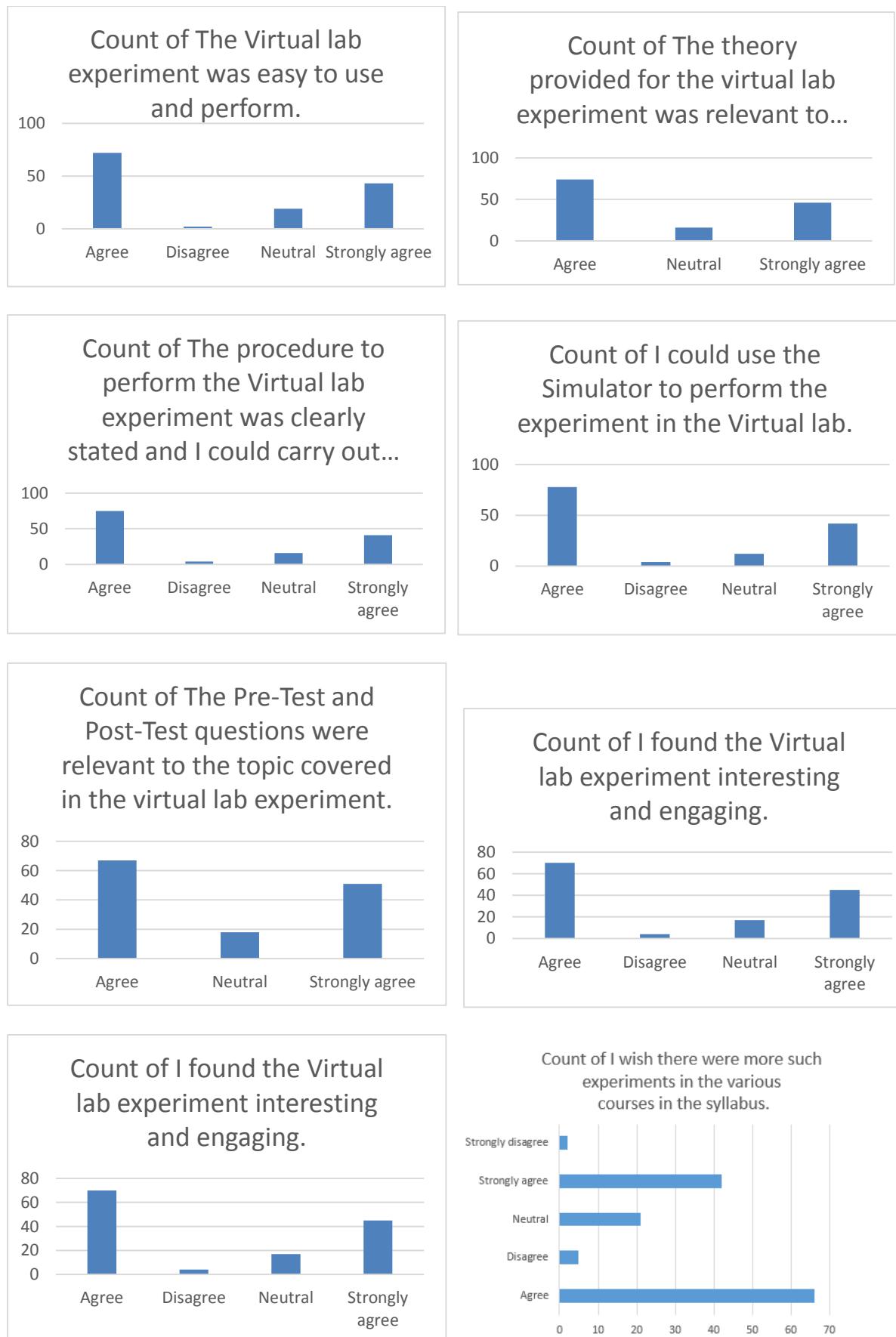
The tab to generate PDF was used to create a PDF of the entire experiment and mail it to faculty after the completion of the virtual experiment.

The feedback was collected from the students regarding the experience of using the virtual labs and learning outcome.

## 5. RESULTS AND FINDINGS

The feedback collected from the students was analysed to understand the students learning about the topic. It was found that:





Based on the feedback, we analysed that most of the students liked the Virtual labs designed and were able to perform the experiment at their leisure. They were able to understand the concept and perform the pre-test and post-test.

## 6. CONCLUSION AND FUTURE WORK

The results of the feedback revealed that students were able to enhance their knowledge, skills, intellectual abilities and attitudes. It also increased students' engagement and achievement. It could be concluded that more than half of students participating in the study agreed that practical work activities using virtual labs had positive impact on increasing students' knowledge, systematic process and skills, intellectual abilities, attitudes, and innovation. It is noticed that virtual can be designed for many topics, but is a time consuming process. Also for some topics virtual labs cannot be designed, so it needs to be conducted in the lab in offline mode.

## REFERENCES

1. Dongfeng Liu, Priscila Valdiviezo-Díaz, Guido Riofrio, Yi-Meng Sun, Rodrigo Barba, Integration of Virtual Labs into Science E-learning, Procedia Computer Science, Volume 75, 2015, Pages 95-102, ISSN 1877-0509, <https://doi.org/10.1016/j.procs.2015.12.224>. (<https://www.sciencedirect.com/science/article/pii/S1877050915036856>)
2. Aljuhani, K., Sonbul, M., Althabiti, M. et al. Creating a Virtual Science Lab (VSL): the adoption of virtual labs in Saudi schools. Smart Learn. Environ. 5, 16 (2018). <https://doi.org/10.1186/s40561-018-0067-9>
3. Virtual Lab Implementation in Science Literacy: Emirati Science, Teachers' Perspectives, Saif Saeed Alneyadi, Department of Curriculum and Instruction, College of Education, UAE University, Al-Ain, UNITED ARAB EMIRATES, Received 25 March 2019 • Revised 26 April 2019 • Accepted 10 May 2019
4. Aljuhani, K., Sonbul, M., Althabiti, M. et al. Creating a Virtual Science Lab (VSL): the adoption of virtual labs in Saudi schools. Smart Learn. Environ. 5, 16 (2018). <https://doi.org/10.1186/s40561-018-0067-9>
5. Lee Stadtlander, Martha Giles, Amy Sickel, The Virtual Research Lab: Research Outcome Expectations, Research Knowledge, and the Graduate Student Experience, Journal of Educational Research and Practice, 2013, Volume 3, Issue 1, Pages 120–138
6. Babateen, H.M. The role of Virtual Laboratories in Science Education.
7. Dr. Manisha Bajpai and Dr. Anil Kumar, Effect of virtual laboratory on students' conceptual achievement in physics, International Journal of Current Research, 2020
8. Douglas Ayega, Adil Khan, Students Experience on the Efficacy of Virtual Labs in Online Biology, ICEEL 2020: 2020 The 4th International Conference on Education and E-Learning, November 2020 Pages 75–79 <https://doi.org/10.1145/3439147.3439170>
9. Stahre Wästberg, B., Eriksson, T., Karlsson, G. et al. Design considerations for virtual laboratories: A comparative study of two virtual laboratories for learning about gas solubility and colour appearance. Educ Inf Technol 24, 2059–2080 (2019). <https://doi.org/10.1007/s10639-018-09857-0>
10. Santiago Hurtado-Bermúdez & Ana Romero-Abrio, The effects of combining virtual laboratory and advanced technology research laboratory on university students' conceptual understanding of electron microscopy, Received 19 Jun 2020, Accepted 07 Sep 2020, Published online: 21 Sep 2020, <https://doi.org/10.1080/10494820.2020.1821716>

# Digital Transformation 4.0

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Track 3

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## A Review on Security And Privacy Issues in Big Data

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### ABSTRACT

Big data deals with huge volume of data, which are growing exponentially with time. Now a days, Big Data related to the service of Internet companies grow rapidly. Since the datasets is rapidly growing it brings more problems. The increase in growing of data cause a problem of how to store and manage this huge heterogeneous datasets with limited use of hardware and software infrastructure. The data from different environment are stored in Hadoop framework. In Hadoop framework, there is no inbuilt security so the data is at big risk and to provide security for such data is important. This paper provides an overview of various Big Data analytics tools. The article reviewed the security and privacy related issues in various domains of Big Data like Healthcare, Social Media and Social Networking.

**Keywords:** *Big Data, Characteristics, Analytical Tools, Security and Privacy Issues.*

### 1. INTRODUCTION

Big Data is different from regular data. Big data deals with datasets that are too large or complex to be dealt with, by traditional data processing application software. Big data often includes data with sizes that exceeds the capacity of traditional software to process within an acceptable time and value. The term 'Big data' is in general use to describe the collection, processing, analysis and visualization associated with very large data sets [1]. The term Big Data describes a data environment in which scalable architectures support the requirements of analytical and other applications which process, with high velocity, high volume data which may have a variety of data formats and which may include high velocity data acquisition [2].

#### *Characteristics of Big Data*

Big Data is characterised into 3 v's: Volume, Velocity, and Variety

**Table1: Characteristics of Big Data [3]**

Factor	Identification	References
Volume	Volume is a huge amount of data that is created from different sources (transaction, unstructured streaming format text, images, audio, VoIP, video, TV and other media).	[4]
Velocity	Velocity refers to the rate of change of data or how often the data is created.	[5]

Variety	Data variety is the measure of the variety of data (text, images, video, and audio) one of the best challenges to the effective use of big Data is data variety for analytics, because of incompatible formats, lack of structures and inconsistencies.	[6]
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### 1.1 OVERVIEW ON BIG DATA ANALYTICAL TOOLS

Big data deal with huge amount of data and multiple data types like structured, semi structured and unstructured and traditional data types. These types of data will reach a huge capacity of storage which require a specific tools to process their data. There are several big data tools that are used for storing, analyzing and manipulating the different types of data. It includes NoSQL, MapReduce, R-language, Hadoop, HPC, Storm, Hbase, GridGain [7][8].

**Table: 2 Comparisons of Big Data tools**

BIG DATA TOOLS CHARACTERISTICS	HADOOP	STORM	HPCC	HABSE	GRID GAIN
DEVELOPER	Apache Software Foundation	Canonical Ltd	HPCC Systems, Lexis Nexis Risk Solutions	Hadoop Framework	Apache Ignite
PROGRAMMING LANGUAGE	JAVA	Clojure & JAVA	C++,ECL	Many Languages	JAVA Based
OPERATING SYSTEM	Cross Platform	Cross Platform	LINUX	Platform Independent	Windows, Linux, MAC OS
ORGANIZATIONS	Facebook, Ebay, Adobe, Twitter, Amazon, Yahoo	Backtype, Twitter	Google, Hbase Platform	Twitter, Webinar	Social Media

**NOSQL:** NoSQL generally referred to as ‘Not Only SQL’, is an open source database software. This tool is used for big data management. That will combine two parts, the traditional SQL techniques and alternative techniques that are used in querying and to retrieve the complex and unstructured datasets. The Apache Casenra NoSQL database tool is used by the social network like Facebook, LinkedIn and Twitter.

**MAPREDUCE:** MapReduce consists two parts, Map and Reduce. The Map is a procedure that filter and sort in the distributed cluster. Reduce is also a procedure that will summarizes the result in single mode. Apache Hadoop software is the most popular open source implementation of the MapReduce. Map function takes an input data and creates a set of intermediate subgroups. MapReduce library combine all intermediate subsets associated with the same intermediate key and send them to the Reduce function. Reduce function combine these subsets and key to create a set of smaller values.

**HADOOP:** Hadoop is an open-source software which is developed by the Apache Software Foundation is an Independent tool that is developed by a Java Framework. That can be used for processing the application and execute the terabytes of non-relational dataset using the several operating system such as Linux, BSD (Berkeley Software Distribution)(UNIX), Windows. Google and Yahoo online search engines uses the Hadoop framework [7][8].

**HPCC (HIGH PERFORMANCE COMPUTING CLUSTER):** HPCC is developed by LexisNexis Risk Solutions. That is used to improve the performance of system and parallel. HPCC is also used in batch based processing along with big data.

**HBASE:** Hbase is also a tool. It's main function is to map the data into datasets. Here, each of the datasets are slatted into n-tuples and to reduce the output that is mapped into another task, to get its original form that will grouped together. It's enhances the Hadoop functionality and their clusters.

**R-LANGUAGE:** R is programming language. It is an implementation of S-language. R-language is used to process the statistical data and graphics. R is a free software environment computing an open-source project [7].

**STORM:** Storm is a very fast processing tool. That can be used to process unbounded stream of data and million tuples per second per node. This tool is used in Real time systems.

**GRID GAIN:** Grid Gain is an open source and analysis tool which is developed by JAVA platform in real time systems. In distributed systems, that will be alternatively used as a Hadoop's Hbase [8]. These tools are appreciated in the area of business intelligence to improve the business and satisfies their goals. In the area of technologies and development, people make the awareness for analytical capability by using these tools.

## 1.2 SECURITY AND PRIVACY ISSUES IN BIG DATA

In present world, Data is increasing day by day. Each day a huge amount of data is coming from different commodity hardware so security and privacy become very important. Many organizations deal with big data every day. So there may be a chance for the types of attacks to occur. The greatest beneficiaries of Internet technology are people. Big Data has largest commercial value, but data analysis is very difficult and complex to maintain and it also threaten the privacy. To overcome the challenges and bring a specific solution we deal with security and privacy [9][10].

### 1.2.1 Security and Privacy Issue in Various Domains

As Big data is tremendously used in different data source, it gives rise in security and privacy issues. So, this section discuss about the security and privacy issue in various domains.

**HEALTHCARE:** As Big data is growing enormously in the area of healthcare. The security and privacy issues in healthcare is very necessary. The healthcare data centers like HIPPA (Health Insurance Portability and Accountability Act) which is certified but it does not guarantee the patient's record safety. It is mostly focused on security policy and procedure to implement them.

**SOCIAL MEDIA:** Social media is a wide range of media which we used to upload and download data for eg: video, audio, blog, slideshow, eBook etc. Social media is a place where people share their information with each other, which can be in the form of text, audio, video, image etc. Social media has given a huge rise to the amount of data and it is growing too fast. Since it is growing heavily and there is no end to the ongoing trend it is difficult to secure the personal data to handle the privacy.

**SOCIAL NETWORK:** Social Network creates a new era for communication. It connects people from anywhere, that as they are near or far. They can also share videos, images, documents etc. The social Networking site like FaceBook provide many options for privacy where the user can make their account, profile secure but these settings are concern only at the user end. The user don't know about the other end where it is handled and developed [10].

**PRIVACY RISK:** People have both convenience and inconvenience while using the Big data. If the Big data used by the people is not protective then it will cause threats to the security and privacy risk. The traditional issue of privacy is not only the security problem of people data, but also based on the research and analysis of people. Many countries are still in lack of protection so the user information can be lost or there may be information leakage.

**THREATS OF DATA SECURITY:** In the Big data era, due to the enormous growth of internet and network environment the security protection of mobile data is more important. Now a day's smart mobile place a big role in people's day to day life. It also store more personal information

of user. At present, people face many security problems in big data. Not only the big data, their intelligent terminal also cause security problem and become worrying.

## 2. REVIEW OF LITERATURE

**Priyanshu Jadon & Durgesh Kumar Mishra (2019)** discussed overall Security issues and gave a detailed solution on how to protect the confidential data. Various Security Issues and the solutions to these problems was elaborated. Security Issues like weakness of Hadoop, insecure MapReduce, key-generation and key-management issues were addressed. Solutions to these Security issues like Trust mechanism, random encryption algorithm and Quantum cryptography were discussed. Issues related to privacy of Big Data was also provided. Various Encryption Techniques like Attribute Based Encryption, Identity Based Encryption and Homomorphic Based Encryption are ensured to protect the privacy of the user. Many privacy preserving techniques like Personal Information and Quasi Identifier was highlighted to handle the privacy over Big Data. Finally an architecture was proposed that helps in achieving the privacy while performing Big Data analytics.

**Md. Tabrez Quazim and Mohammad Meraj (2017)** reviewed shortly about the Big Data security and privacy. Concept of Big Data like volume, velocity, variety and huge numbers of data sources were discussed. Security and privacy issues of Big Data was focused. Also overview of current challenges and Future Research perspectives of security and privacy of Big Data was highlighted. In privacy, social network mining, Big data Analytics, Big graph analysis and mining were preserved. Finally, the security issues outsourced database and security aspects during Big Data exchange and Querying Cloud-Enabled DBMS were summarized.

**Shuyu Li and Jerry Gao (2016)** reviewed the critical issues on Big Data and overview of state-of-the-art research was provided. Recent advances in data encryption, privacy preservation and trust management was highlighted. A detailed explanation of data encryption including searchable encryption, order-preserving encryption, structured encryption and homomorphic encryption were analyzed. In the section of privacy preservation three representative mechanism including access control, auditing and statistical privacy were reviewed. In the section of trust management several approaches like trust and reputation models were investigated. Big Data platforms like Apache Hadoop was discussed. Several distinct topics within security and privacy of Big Data was reviewed.

**Boel Nelson and Tomas Olovsson (2016)** performed a systematic literature review. The complete review provided the current state of privacy and security in big data. An overall context of big data was described. Also, an overview of security and privacy of Big Data were categorized including both quantitative and qualitative way. Confidentiality, Data integrity, privacy, Data analysis, visualization, Data format and stream processing were explored. The relationship between the categories was visualized. Finally, the security and privacy for Big Data was discussed and found out from the reviewed paper.

**Dongpo Zhang (2013)** security and privacy issues of Big Data were analyzed. Sources and characteristics of big data was explained. Here, the categories of Big Data is divided into three such as Privacy risks, Lack of Big data privacy protection technology, threats to data security and were discussed in detailed manner under Big Data security challenges. Finally, fully supervised data information in social networks, Improvement of privacy protection legal mechanism, Establishment of privacy protection agency and Improvement of people's awareness and quality of data in the Big data security and privacy protection were proposed.

**Jose Moura & Carlos Serrao (2015)** explored the most important aspects in how computing infrastructures is configured and intelligently managed for application security in big Data. Also discussed the most important challenges to Information security and privacy. 5V's of Big Data characteristics were presented that affect information security. Cloud Service Alliances has categorized the different security and privacy challenge into four different aspects of Big Data ecosystem. Various solutions of Big Data security and privacy challenges were also addressed. Homomorphic encryption was described in detail. Two different use cases were presented. First case described about solving security and privacy issues on social network. A case study about an Intelligent Intrusion Detection/Prevention system (IDS/IPS) belonging to a Software Defined Network (SDN) was made in detail. Second case exposed that SDN is an emergent management solution to implement security in Big Data Systems.

**Nitin Kr. Agrawal and Dr Aprna Tripathi (2015)** reviewed about the security and privacy issues in various domain of Big Data. The author discussed about the data dependence in Big Data. Big internet companies such as Google, Facebook, Amazon, ebay etc are depend on Big Data because Big Data was bigger than these big companies. This review also highlighted about the security and privacy issues in Healthcare. As the healthcare industry was growing, the security and privacy issues must be concerned. And the paper also spoken about the future Big Data in healthcare. The security and privacy issues in social media and social network was also discussed. Widely used communication network (i.e.) Internet of Things (IOT) was briefly defined.

**Khairulliza Ahmad Salleh and Lech Janczewski (2016)** explored the review on security and privacy issues of Big Data. Here, the author highlighted about the motivation, scope and objectives of Big Data. The scholarly literature on Big Data was written in different perspectives. The methodology of Big Data was explained. Issues was classified into three context like technological, organizational and environment context. Finally the major limitation of Big Data was identified. The aim of future research activities was also outlined.

**Gayatri Kapil, Alka Agrawal and R.A Khan (2018)** discussed the use and characteristics of extensive informations. Some potential methods and techniques was also elaborated to ensure security and privacy in Big Data. This paper also explained the dimensions of Big Data. The technology and fundamental tools for Big Data was highlighted. The fundamental tools such as data cleaning, data mining, data analysis, data collections, data integration and data visualization were focused. The process of Hadoop framework was also explored. The challenges of Big Data like processing challenges, data challenges, human resources and man power challenges, technical challenges, security and privacy challenges were described. Finally Bigdata security approaches was summarized.

**T Gundu (2019)** discussed Big Data security and Privacy risks. Characteristics of Big data like volume, velocity and variety was studied. Design and validation of social cognition model for Big data security and Privacy was reported. The effectiveness of the model in bridging the knowledge and action gap was evaluated by review process. Big Data categorization based on sources was presented. Social cognitive theory was selected and examined to understand human behavior. Theoretical foundation of the study was made. The proposed model was discussed and empirical trial was reported. Using this model and research, organizations will be able to refine their security and privacy interventions to maximize effectiveness.

### 3. CONCLUSION

In present world, Data is increasing day by day. Each day a huge amount of data is coming from different commodity hardware so security and privacy become very important. Many organizations deal with big data every day. So there may be a chance for the types of attacks

to occur. Big Data has largest commercial value, but data analysis is very difficult and complex to maintain and it also threaten the privacy. To overcome the challenges and bring a specific solution we deal with security and privacy. This paper reviewed various security and privacy related issues in Big Data. Finally it concluded with the privacy protection. Privacy is more important, because as data grows rapidly, many organization faces security problems. So, a proper security and privacy policies to protect the data from different kinds of attack is necessary.

## REFERENCES

1. Gupta P, Tyagi N (2015), “An Approach Towards Big Data: A Review”, International Conference on computing, Communication Automation (ICCCA), pp.118-123.
2. Isitor Emmanuel, Clare stanier (2016), “Defining Big Data”, Proceedings of International Conference on Big Data and Advanced Wireless Technologies.
3. Akbar Khanan, Salwani Abdullah, Abdul Hakim H.M, Amjad Mehmood, Khairul Akram Zainol Ariffin (2017), “Big Data Security and Privacy Concerns: A Review”, Smart Technologies and Innovations for a sustainable Future, pp. 55-63.
4. Cardenas A.A, Manadhata P.K, Rajan S.P (20113), “Big Data analytics for Security”, IEEE Secur.priv. 11(6), pp. 74-76.
5. Li Y, Gai K, Qui M, Zhao H (2017), “Intelligent Cryptography Approach for Secure Distributed Big Data Storage in Cloud Computing”, Inf. Sci 387, 103-115.
6. Xu L, Jiang C, Wang J, Yuan J, Ren, “Information Security in Big Data: Privacy and Data Mining, IEEE Access 2, pp. 1149-1176.
7. Nour E Oweis, Suhail S Owais, Waseem George, Mona G sulaiman, Vaclav Snasel (2015), “A Survey on Big Data, Mining: Tools, Techniques, Applications and Notable Users”, Intelligent data analysis and applications, pp. 109-119.
8. J Vijayaraj, R Saravanan, P Victer Paul, R Raju (2016), “A Comprehensive Survey on Big Data Analytics Tools”, International Conference on Green Engineering and Technologies, pp. 1-6.
9. Priyanshu Jadon and Durgesh Kumar Mishra (2019), “Security and Privacy Issues in Big Data: A Review”, Emerging Trends in Expert Applications and Security, Advances in Intelligent System and Computing, Springer, pp. 659-665.
10. Nitin Kr. Agrawal, Dr. Aprna Tripathi (2015), “Big Data Security and Privacy Issues: A Review”, International Journal of Innovative Computer Science & Engineering, Vol. 2, Iss. 4, pp.12-15.
11. Dr. Md. Tabrez Quazim and Mohammad. Meraj (2017), “Big Data Security and Privacy: A Short Review”, International journal of Mechanical Engineering and Technology (IJMET) Vol. 8, Iss. 4, pp. 408-412.
12. Shuyu Li and Jerry Gao (2016), “Security and Privacy for Big Data”, Big Data Concepts, Theories, and Applications, 281-313, Springer.
13. Boel Nelson and Tomas Olovsson (2016), “Security and Privacy for Big Data: A Systematic Review”, IEEE International Conference on Big Data, pp.3693-3702.
14. Dongpo Zhang (2013), “Big Data Security and Privacy Protection”, Advanced in computer science Research, International Conference on Management and Computer Science, Vol. 77.
15. Jose Moura and Carlos Serrao (2015), “Security and Privacy Issues of Big Data”, Handbook of research on trends and web intelligence, pp. 20-52.
16. Khairulliza Ahmad Salleh, Lech Janczewski (2016), “Technological, Organizational and Environmental Security and Privacy Issues of Big Data: A Literature Review”, International Conference on Project Management.

17. Gayatri Kapil, Alka Agrawal and R.A. Khan (2018), “Big Data Security and Privacy Issues”, Asian Journal of Computer Science and Technology, Vol. 7, No. 2, pp.128-133.
18. T.Gundu (2019), “Big Data Security and Privacy Risks: Bridging Employee knowledge and Actions Gap”, Journal of Information Warfare 18(2), pp. 15-30.

## A Study of Cyber Security Challenges And Its Trends

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### **ABSTRACT**

Cyber security plays a very important role in securing the knowledge and transmissions. It's become one in every of the largest challenges within the current time. Cyber security provides awareness so as to safeguard from on-line frauds and cyber crimes. Whenever we predict concerning the cyber security, we predict of "cyber-crime" that is increasing day by day. Varied governments and corporations are taking necessary actions to forestall cyber-crime. It protects security to sensitive information, networks, and software package applications from cyber attacks. This paper focuses on the challenges long-faced within the space of cyber security and also the rising threats in cyber security.

**Keywords:** *Cyber Security, Cyber Crime, Security Techniques, Challenges and Trends.*

### **1. INTRODUCTION**

Our life is becoming more digitalized with the rapid technological developments. Be it business, education, shopping or banking transactions, almost everything is on the cyber space today. The attention being given to cyber security is often focused on trying to define the problem and assess the true threat level. Cyber security plays an important role in the development of information technology as well as Internet services. Cyber security protects all forms of data from threats of theft or damage – it can include sensitive information, personally identifiable information (PII), protected health information (PHI), intellectual property, and other large information systems. The scope of Cyber Security extends not only to the security of IT systems within the enterprise, but also to the broader digital networks upon which they rely including cyber space itself and critical infrastructures [4].

### **CYBER SECURITY**

Cyber security is a subset of computer security that deals with the internet. It refers to the safeguarding of computer systems and networks against the theft or loss of their hardware, software, or electronic data, as well as the disruption or misdirection of the services they provide. Cyber security is made up of numerous layers of protection that are spread over computers, networks, applications, and data to keep them safe.

### **CYBER CRIME**

Cyber crime is a term for any illegal activity that uses a computer as its primary means of commission and theft. Usually in common man's language cyber crime may be defined as crime committed using a computer and the internet to steal a person's identity[5].They have some categories of cyber crime such as cyber crime against individuals, property, organization and society.

### **1.1 TYPES OF CYBER SECURITY**

Some common types of cyber security that completely based on protecting from different types of viruses, worms and Trojans.

**NETWORK SECURITY:** Network security is a common type of computer security it deals with secure the network and it from privately owned computer networks to the internet itself against different types of viruses and also have some other forms of threats to keep working of computer network smooth.

**DATA SECURITY:** Data security defined as an act of protecting the data present on computer from different types of threat through software or hardware solution. This data can reside in one or more computer storage devices.

**SYSTEM SECURITY:** System security concerns about malicious programs can disrupt and sometimes destroy the computer system. This program can be viruses such as Trojan horse, rabbits and so on. Ransomware is one of the type of malware. Malware that prevents or limits from accessing their system.

## 1.2 CYBER SECURITY TECHNIQUES

- **ENCRYPTION:** Encryption makes data unreadable without the use of a special key to decrypt it. To break an encryption, one would have to solve difficult mathematical problems like factoring huge primes, which would take an enormous amount of processing power and time.
- **DATA AUTHENTICATION:** The document must receive always be authenticated before downloading it should be checked and a reliable source and that they are not altered. This document is done by anti-virus software present in devices. It is the good anti-virus software and it protects the device from virus [5].
- **DIGITAL SIGNATURES:** Digital signatures can be erected out of the same mathematical algorithms that are employed in asymmetric encryption. A user is free to test that he possesses a private key by getting some information encoded with it. Anyone can get the same decrypted by having the public key that will verify the person's credentials.
- **FIREWALLS:** A firewall is a piece of software or hardware that prevents hackers, viruses, and worms from infiltrating your computer via the internet. If a firewall is installed, all messages are sent to the internet. When it comes to malware detection, the firewall is crucial.
- **ANTI-VIRUS SOFTWARE:** Anti-virus software is one of the computer program that will detect, prevent and take action for many other software. Anti-virus software is mostly included an auto-update feature it enables the program to download profile for new virus [5].

## 2. CYBER SECURITY CHALLENGES

Cyber Security is becoming a severe issue for individuals, enterprises, and governments alike. In a world where everything is on the internet, from cute kitten videos and our travel diaries to our credit card information, ensuring that our data remains safe is one of the biggest challenges of Cyber Security.

**INCREASING RATE OF MOBILE MALWARE:** Mobile malware is malicious software that is designed to specifically target mobile operating systems and disrupt their functionality. The most common cause is the insecure use of URLs over Wi-Fi or other internet networks. According to the 2021 Mobile Protection Report, 97 percent of enterprises face threats related to mobile malware from various vendors claiming to deliver next-level security to existing cellular networks.

**IOT ATTACKS:** IoT devices are computational, digital, and mechanical devices that can send data over the internet on their own. As the popularity of IoT devices grows at an unprecedented rate, so are the cyber security challenges. The compromise of sensitive user data can occur

when IoT devices are attacked. One of the most difficult tasks in Cyber Security is protecting IoT devices, as obtaining access to these devices can lead to further harmful assaults.

**REMOTE WORK SECURITY:** It can be difficult to keep track of today's increasingly dispersed workforce. Many of the tools that remote employees rely on have new flaws. Amazon Cloud Drive, for example, does not provide at-rest encryption, and Zoom is known for its security problems. Managing people on multiple networks with potentially vulnerable devices is rarely simple.

**PHISHING ATTACKS:** Phishing is a type of social engineering assault that is frequently used to obtain sensitive information from users, such as login credentials and credit card details. Unlike ransomware attacks, the hacker does not block confidential user data after obtaining access to it. Instead, they exploit it for their own gain, such as internet shopping and money laundering. Phishing attacks are common among hackers because they can use the victim's data until the user notices. Phishing assaults are still a huge problem in India's cyber security, as the population isn't used to managing sensitive information.

**MACHINE LEARNING AND AI ATTACKS:** While Machine Learning and Artificial Intelligence technologies have proven to be extremely advantageous for significant progress in a variety of fields, they also have flaws. Unlawful individuals can use these technologies to carry out cyber-attacks and represent a threat to enterprises. These algorithms can be used to find high-value targets in a vast dataset. Attacks against machine learning and artificial intelligence (AI) are another major worry in India.

### 3. TRENDS CHANGING CYBER SECURITY:

**INTERNET OF THINGS:** As the Internet of Things grows, so does the potential for cyber crime. The Internet of Things (IoT) refers to physical items that connect to the internet and share data, but are not computers, phones, or servers.

**RISE OF AUTOMOTIVE HACKING:** The development of vehicle hacking will be the first cyber security trend in 2021. Modern vehicles are equipped with automated software that allows for smooth connectivity for drivers in areas such as cruise control, engine timing, door locks, air bags, and advanced driver aid systems.

**ATTACKS ON CLOUD SERVICES:** Many businesses have turned to cloud-based computing services in recent years, which allow customers to access software programmes, data storage, and other services over the internet rather than relying on physical infrastructure. Many advantages come with using this technology, including lower operating costs and better efficiency.

**RANSOMEWARE ATTACKS:** Targeted ransomware is another important cyber security trend that we can't seem to ignore in 2020. Industries, particularly in industrialized countries, rely largely on specialized software to carry out their daily tasks. The Wanna Cry ransomware attack on NHS hospitals in England and Scotland, for example, corrupted almost 70,000 medical devices. Despite the fact that ransomware often threatens to reveal the victim's data until a ransom is paid, it can also harm huge organizations or countries.

**INCREASED MOBILE SECURITY THREATS:** Companies have offered corporate cell phones or allowed the use of personal devices under Bring Your Own Device (BYOD) rules, making the usage of mobile devices for professional purposes more prevalent in recent years. Employees worked from whatever devices were accessible during the COVID-19 epidemic, which resulted in a substantial surge in mobile device usage. As a result, many firms' IT infrastructures now include mobile devices as a mission-critical component.

#### 4. REVIEW OF LITERATURE

**Dr. Prof. Rajasekharaiah K. M, Chhaya Dule and Sudarshan E (2020)** discussed on the new technologies for cyber security, ethics and developments that impact cyber security. Cyber-security techniques including firewall and malware scanners have been mentioned. He also discussed the Recent Survey Issues on Cyber Security and mentioned that Malware is the main option for malicious arms to violate the cyber protection efforts of cyberspace. Preventive measures to avoid Cyber-crimes are listed. He concluded that the cyber-crime has significant consequences for national and economic security.

**Ravi Sharma (2021)** discussed the Latest Trends on Cyber Security Issues and showed the graph of cyber-crimes in India. He listed the Recent Survey Issues on cyber security such as Cloud Computing and Social Media Networking. Specific Cyber Security Technologies including authentication, malware scanners, firewalls and cryptography were discussed. He concluded that there is no single answer for success, but by working across public and private sector partnerships and by advancing security measures particularly with regard to mission-critical systems, processes and applications that are connected into cyberspace, businesses will be able to work towards a future environment.

**Shweta Ghate and Pragyesh Kumar Agarwal (2017)** defined the cyber security in terms of three elements – Confidentiality, Integrity and Availability. They discussed several types of computer securities that are completely based on protecting from different types of viruses, worms and Trojans. Types of Cyber Securities and Cyber-attacks were described. They explored important cyber law provisions in India and discussed the threats, vulnerabilities and impacts of Cyber Security. They concluded that concrete measures must be found in order to track electronics evidence and preserve them so that systems are better protected from cyber intrusions. . Cyber security education, R&D and training should be an integral part of the national cyber security strategy

**Dr. Sandeep Kumar and Prof. Arjun Singh (2019)** discussed the cyber security challenges and its emerging trends on cloud security issues and techniques. Trends changing cyber-security includes web servers, cloud computing and its services, mobile networks and IPV6-a new internet protocols has been described. They mentioned that Social media plays a huge role in cyber security and will contribute a lot to personal cyber threats under sub-heading Role of social-media in cyber security. Various Cyber security techniques such as password security, authentication data, firewalls, anti-virus software were discussed. Cyber ethics rules to use the internet in a proper safe way has been listed. He concluded that the There is no perfect solution for cyber crimes but we should try our level best to minimize them in order to have a safe and secure future in cyber space.

**G. Nikhita Reddy and G. J. Ugander Reddy (2014)** discussed the cyber security challenges and its emerging trends on latest technologies .They listed the cyber crime, cyber security, trends changing cyber security, role of social media in cyber security, cyber security techniques and cyber ethics. Here mentioned some of the trends changing cyber security it includes web servers, cloud computing and its services, APT's and targeted attacks, mobile networks,IPv6-new internet protocol and encryption of the code .Cyber security techniques includes access control and password security, authentication of data, malware scanners, firewalls and anti-virus software were discussed. They had also mentioned the diagram for techniques on cyber security. They concluded that there is no perfect solution on cyber crimes but we should try our level best to minimize them in order to have a safe and secure future in cyber space.

**Atul M. Tongue, Suraj S. Kasture and Surbhi R. Chaudhari (2013)** defined the cyber security challenges for society. They listed the activity of protecting information and information systems such as networks, computers, databases, data centres, and applications with appropriate procedural and technological security measures has been described.

Firewalls, antivirus software and other technological solutions for safeguarding personal data and computer networks are essential but not sufficient to ensure security. They concluded that cyber security emerging trends while adopting new technologies and also describes the challenges due to lack of coordination between security agencies.

**Adel S. Elmaghraby and Michael M. Losavio (2014)** discussed about cyber security challenges in smart cities includes safe, security and privacy. They defined the methodology term it has several paradigms and categorical structures and also be applied in analyzing the benefits and detriments of this data environment. They included that the data sources feed data collections feed data analytics knowledge, the production loci of data in the smart city, source nodes of activities and services producing data and the recursive cycle of data in the smart city information generated. They concluded that the smart city offers us much but we must not let it take that which makes us who we are. Difficult and concerned debate on these issues is needed.

**Azeez Nureni Ayofe and Barry Irwin (2010)** defined the cyber security challenges and the way forward. They study the methodology of cyber crime and security. They enumerated the concept of cyber crime, the reason behind the involvement of such crimes against persons, property and government. Cyber crime include the unauthorized access of hosts, spamming, computer fraud scams. Denial of service attacks, Viruses, Trojans and worms. Eradicate cyber-crime is international cooperation and law, this goes for greed motivated and cyber terrorised. Cyber-crime involved three categories teenagers to get spotlight of media, career criminals who are greed motivated to make money and cyber terrorists are involved. Criminal mail the need to detect such mail by putting security measures in place. They also studied phishing and mentioned identify theft which is a great crime. They concluded that cyber-crime is still work progress, it becomes necessary for individuals and corporate bodies to fashion out ways of providing security for their systems and data.

**Y.Poornima and Y.Naveena and V. Harsha Vardhana (2015)** discussed the cyber security issues and challenges in India. They enumerated the concept of cyber security processes and controls to protect systems, networks, programs, devices and data from cyber-attacks. The risk of cyber security includes three factors threats, vulnerabilities and impacts. They listed the government role such as the Indian cyber space, National security policy 2013. Vulnerabilities and Existing counter cyber security initiatives. Here mentioned some long-term challenges include Design, Incentives, Consensus and environment. Federal role in cyber security involves both securing federal systems and assisting in protected nonfederal systems. They had also mentioned the diagram for federal agency cyber security role. They concluded that more dependent on the Internet for daily life activity, we also become more vulnerable any disruptions caused in and through cyberspace.

**Abdullahi Arabo (2015)** defined the future of cyber security challenges within the connected home ecosystem. He enumerated the concept of security threats on smart devices the problem of cyber security extends beyond computers it threat to portable devices. Threat assessments including lost or stolen devices, open Wi-Fi and public, network, malware and viruses, corporate policy, theft/abuse of services and unauthorized cyber-physical control has been described. The author concluded that cyber security experts will see increasing threat to the home infrastructures as the key target and challenges for them to address as cybercriminals will find such systems easy to use and infiltrate.

## 5. CONCLUSION

One of the most important parts of the rapidly developing digital work is cyber security. Organizations are being challenged not only with how they safeguard their infrastructure, but also with how they require new platforms and intelligence to do so, thanks to the latest and most harmful technology, as well as new cyber tools and threats that emerge every day. There

is a need for international cooperation of nations to crack down on cyber crime and ensure the development of the internet. Because cyber crime is not limited to states of borders, it necessitates a global collaboration of nations to work together to reduce the ever-increasing threats and risks to a manageable level.

## REFERENCES

1. Dr. Prof. Rajasekharai K. M, Chhaya Dule and Sudarshan E (2020), "Cyber Security Challenges and its Emerging Trends on Latest Technologies", PP.2-8.
2. Ravi Sharma (2021), "Study of Latest Emerging Trends on Cyber Security and its challenges to Society", International Journal of Scientific & Engineering Research, Volume 3, Issue 6, PP.1-4.
3. Shweta Ghate and Pragyesh Kumar Agarwal (2017), "A Literature Review on Cyber Security in Indian Context", Journal of Computer & Information Technology, PP.1-7.
4. Dr. Sandeep Kumar and Prof. Arjun Singh (2019), "Cyber Security Challenges and its Emerging Trends on Cloud Security Issues and Techniques", Journal of Advances and Scholarly Research in Allied Education, Volume 16, Issue 4, PP.3-6.
5. G. Nikhita Reddy and G. J. Ugander Reddy (2014), "A Study of Cyber Challenges and its Emerging Trends on Latest Technologies", PP.2-7.
6. Atul M. Tongue, Suraj S. Kasture and Surbhi R. Chaudhari (2013), "Cyber Security: Challenges for Society- Literature Review", IOSR Journal Computer Engineering (IOSR-JCE), Volume 12, Issue 2, PP.1-9.
7. Adel S. Elmaghriby and Michael M. Losavio (2014), "Cyber Security challenges in Smart Cities: Safety, security, and privacy, Journal of Advanced Research, PP.1-2.
8. Azeez Nureni Ayofe and Barry Irwin (2010), "Cyber Security: Challenges and the way forward", PP.2-15.
9. Y. Poornima and Y. Naveena and V. Harsha Vardhana (2015), "Cyber Security Issues and Challenges in India", International Journal of Scientific & Engineering Research, Volume 8, Issue 5, PP.1-7.
10. Abdullahi Arabo (2015), "Cyber Security Challenges within the Connected Home Ecosystem", PP.1-6.

## An IoT Based Automotive Car Using Raspberry Pi

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### **ABSTRACT**

The paper presents a low cost and flexible automotive car model using a raspberry pi system on chip. With connectivity of the various devices for performing working of the car automatically. This proposed system provide us with auto modification of the model of the car. It don't require any server PC with respect to similar system and offer flexibility to control driving of the car with respect to environment and its functionalities .To demonstrate the feasibility and effectiveness of the system devices like light detecting sensors, range sensor, ultrasonic sensor ,H-bridge and various integrated devices are used.

**Keywords:** *Raspberry Pi, sensors, detectors, Python.*

### 1. INTRODUCTION

The Internet of the things can be described as connecting everyday objects like smartphones, Internet TVs , sensors and actuators to the internet where as devices are intelligently linked together communicating people and between things themselves

AUTOMOTIVE CAR can be described as introduction of Technology within the car to provide convenience and comfort security and Energy Efficiency to its passengers the AUTOMOTIVE CAR is an IOT based application this paper can be it has multiple GPIO ports that can be programmed and they can give the user control over breaks, path detection, turning. It provides user friendly interface on host side so devices can be easily setup and monitored.

The reason to develop the system is to save time and manpower along with safety and convenience Automotive car refers to the application of computer and information technology for control over automatic driving of the car and easily reducing the power consumption or Power wastage associated with manual system the application varies from simple remote control of car best networks involving the Intelligence and automation

### 2. OBJECTIVES

**To reduce to manual work of the driver:** Helps in reducing the manual work of the driver as the car gives efficiently on its own the car efficiently acts to the problems incoming from the environment making it more alert to the accident prone areas

**Helps to follow lane discipline on the roads:** due to range sensors it helps to follow the lane of the roads avoiding the accidents

**Ensures safety of the passengers by avoiding accidents:** ultrasonic sensors helps in obstacle detection of the car in the Pathways making it more safe it also helps in auto turning on the critical nodes and ensuring the safety of the passengers

**Helps to maintain signal discipline:** the model has light detecting sensors it helps to follow the traffic rules and avoids the violation of the laws creating and secure environment for the driver and passengers to complete their journey safely

**Reduces the pollution:** as the car model works on the electricity no burning of fossil fuel takes place due to which our environment it remains healthy and no pollution is caused due to release of toxic gases

## 2.1 PURPOSE

with Automotive car you can drive your car safely and smartly using iot you can get complete remote access of your car loving you to work more efficiently Automotive car allows you to activate a group of devices with a single touch it not only give your peace of mind but also helps you to drive safely and monitor your driving efficiently the form of Automotive car focuses on making it possible for the driver and the passenger to be safe and comfortable on their journey

- It helps drivers and passengers to complete their journey more comfortably and efficiently
- It focuses on smooth driving and ensures the safety of the people
- It helps to follow the traffic signals and avoids violation of the rules

## 2.2 SCOPE

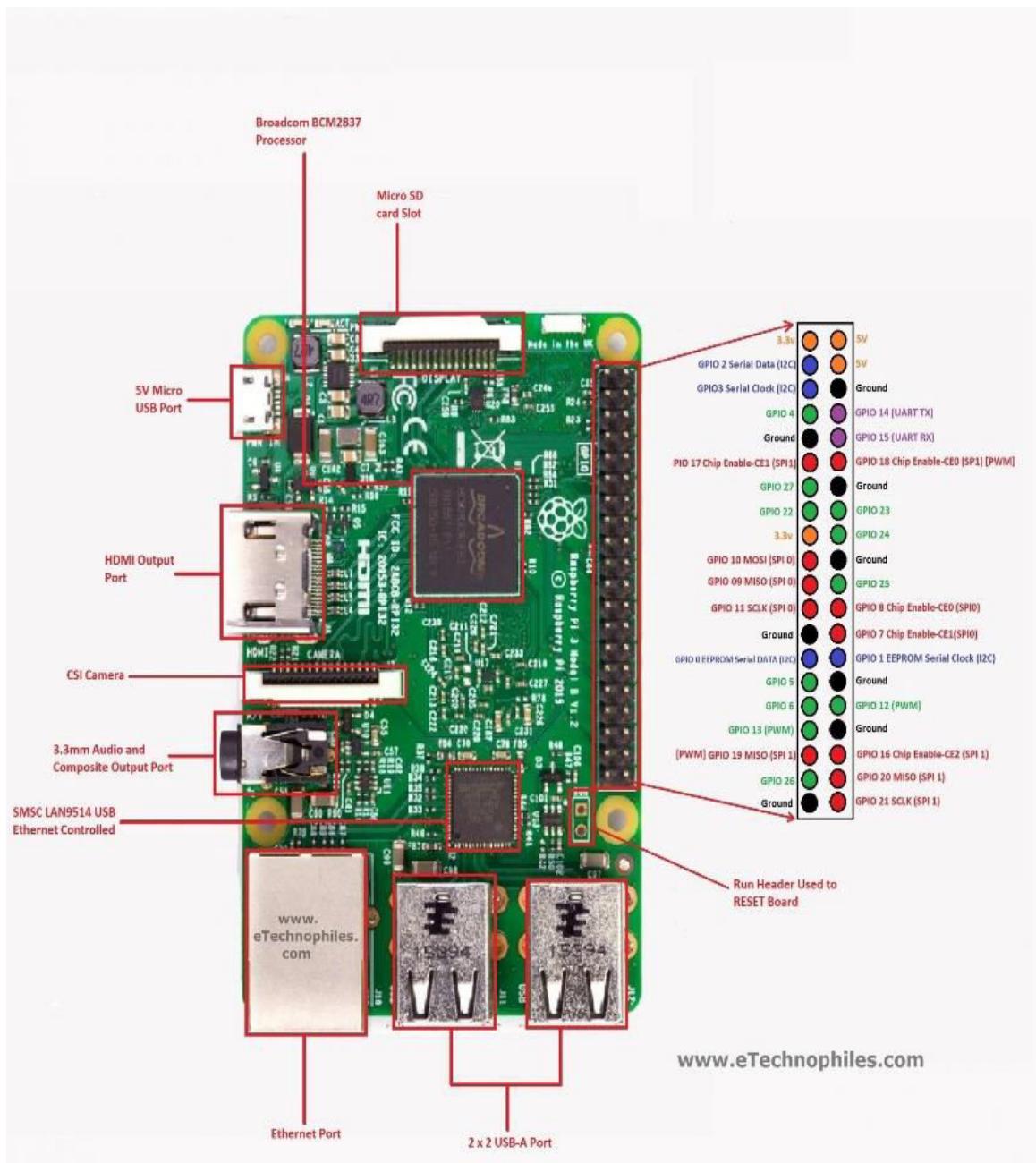
project aims at designing a model for controlling the car in efficient manner that can ensure the safety of the passenger and helps in following the traffic rules and avoid the accidents which take place due to violation of laws

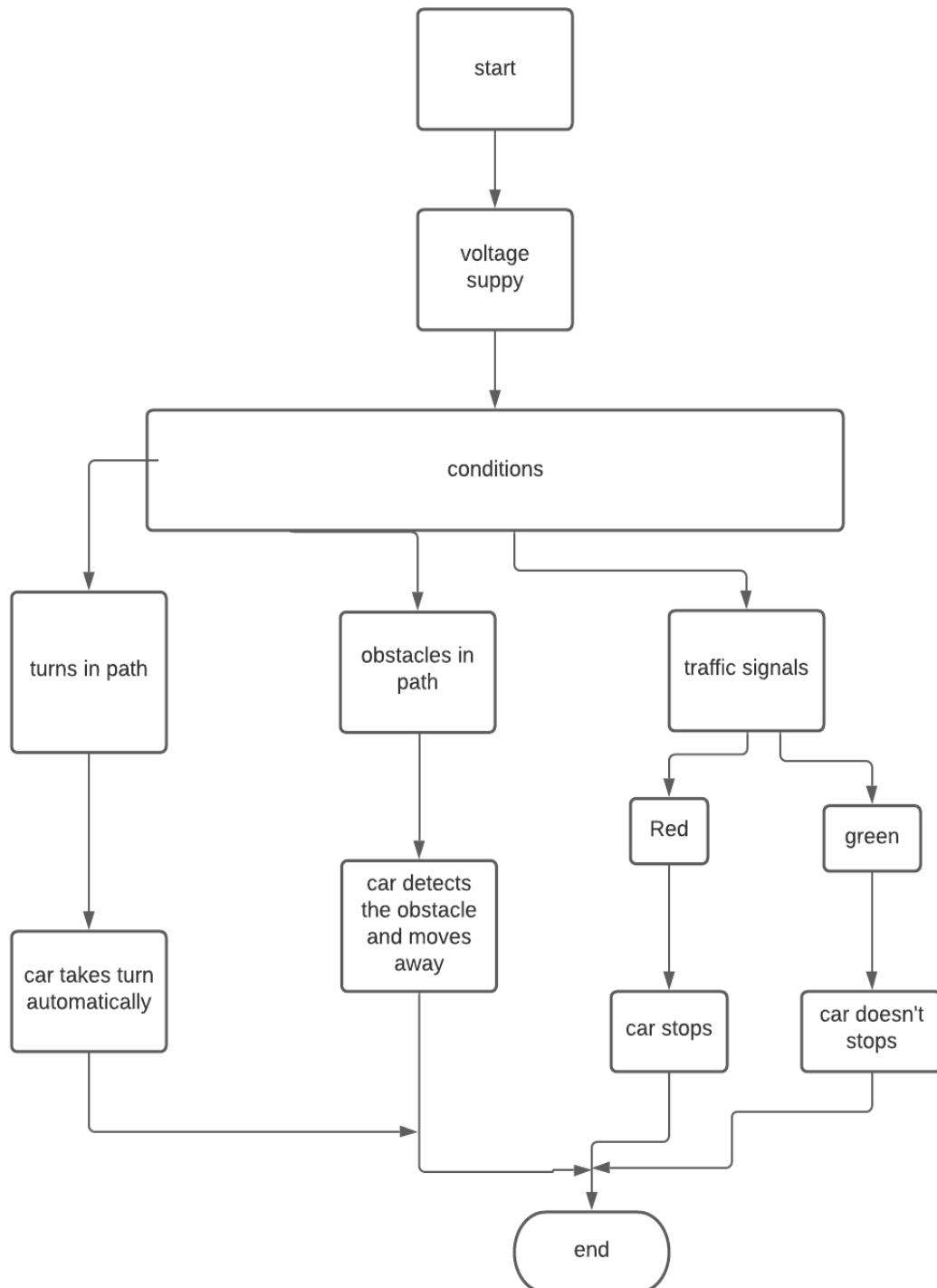
### 3.1 PROBLEM DEFINATION

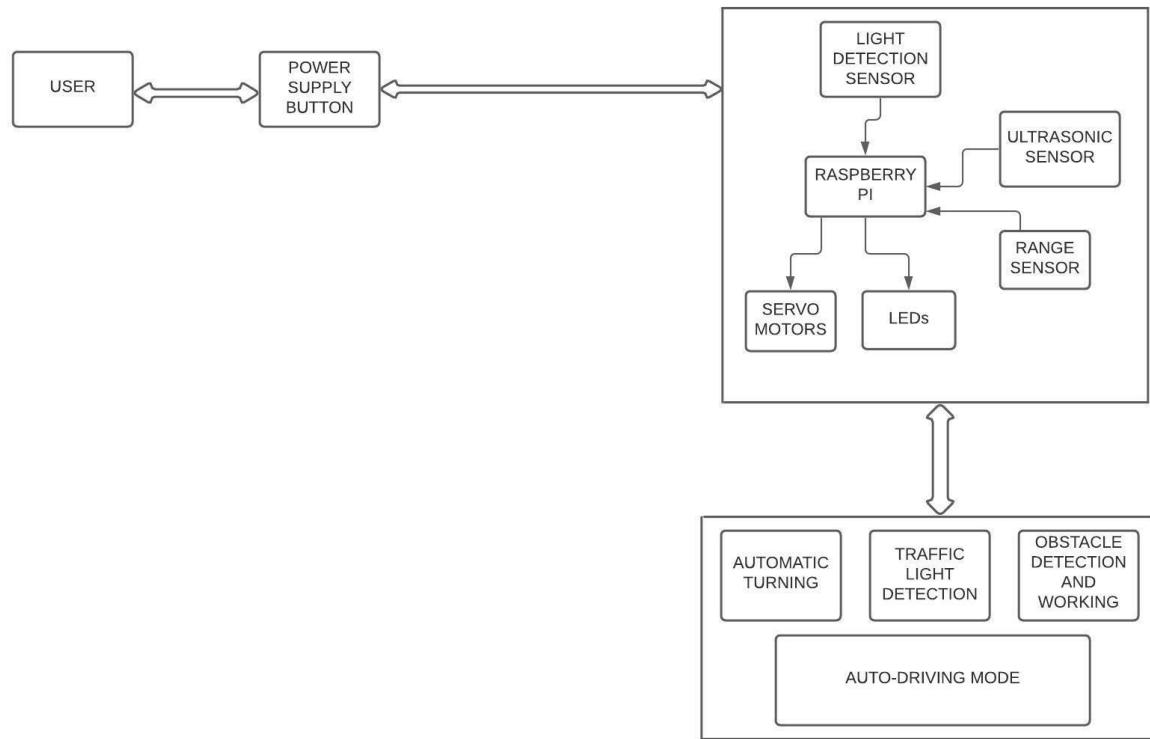
Some times it becomes hard for us to drive the car and reach the destination especially when the driver is exhausted in the circumstances we are advised to issue a break in the journey to avoid accidents and ensure the safety . as every coin has two sides like that every topic has its pro's and con's same way there are drawback of the automotive car also .

Sometimes person unknown to the modification of this car may not be able to gain the utmost benefit from this model. Sudden obstacle in path may make it very difficult to react on time as it appears suddenly and makes difficult to manage the obstacle in path. Due to more complexity of the models it becomes difficult for the developer to manage the errors and avoiding the minor errors. The condition of the roads should be suitable for smooth working of the car. As it is an time critical project the wrong input from the driver can create an problem in execution of the work smoothly

## CIRCUIT DIAGRAM



**FLOWCHART**



## REFERENCES

1. PROGRAMMING THE RASPBERRY PI WITH PYTHON BY SIMON MONK 2012
2. HOW THE CARS WORK BY TOM NEWTON 1999 REFERENCES
3. BUILDING THE INTERNET OF THINGS BY MACIEJ KRANZ 2 NOVEMBER 2016
4. EXPLORING RASPBERRY PI BY DEREK MOLLOY 9 JUNE 2016

## Digital Voting System Using Blockchain

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### **ABSTRACT**

Since the late 1980s, electronic voting, often known as e-voting, has been used in many forms with key advantages over paper-based systems such as enhanced efficiency and reduced errors. However, there remain challenges to understand wide spread adoption of such systems especially with regard to improving their resilience against potential faults. Blockchain could be a game changing technology of current era and promises to reinforce the overall resilience of e-voting systems. Building a secure electronic voting system that provides the fairness and privacy of current voting schemes, while providing the transparency and adaptability offered by electronic systems has been a challenge for an extended time. In this paper, we evaluate an application of blockchain as a service to implement digital electronic voting systems. Especially, we evaluate the potential of distributed ledger technologies through the outline of the tactic of an election, and thus the implementation of a blockchain based application, which improves the security and reduces the cost of hosting a nationwide election.

### 1. INTRODUCTION

Elections are fundamental pillar of a democratic system enabling the overall public to give their views within the sort of a vote. They mostly play an important role within the way forward for citizens life. Therefore, it's much importance for each single person involved in these elections. no matter the organization, elections need to be trustworthy in its nature. they need to make sure people's privacy and vote's security. Additionally, the authority which is liable for counting votes shouldn't spend an excessive amount of time on counting votes since waiting long period of your time for results increases concerns about manipulation of results. However, thanks to the various reasons counting on the areas that elections are made, trust has been a controversial issue for every election. To dissipate problems of both conventional and e-voting elections, e-voting are often improved using Blockchain mechanism. Blockchain has impressive features to beat troubles of voter's security, privacy and data integrity of votes. Blockchain is one among the emerging technologies with strong cryptographic foundations enabling applications to leverage these abilities to realize resilient security solutions. Blockchain is a distributed, immutable, public ledger. This technology has three main features:

(I) **Immutability:** Any proposed "new block" to the ledger must relate to the prior ledger version. This generates an immutable chain, which is how the blockchain got its name, and precludes tampering with prior entries integrity.

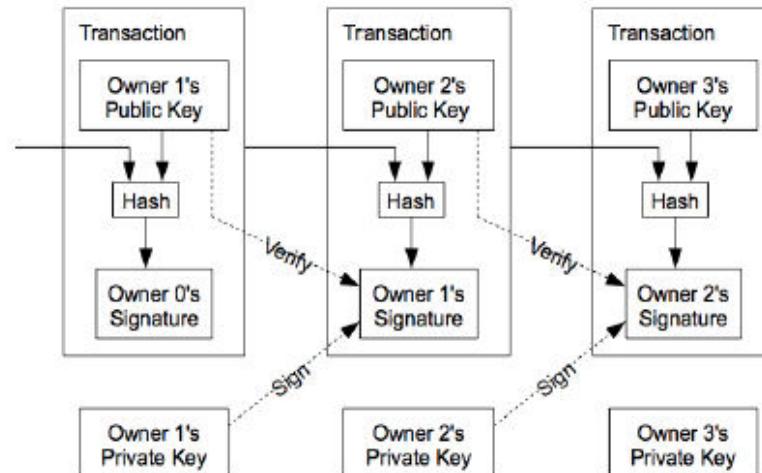
(ii) **Verifiability:** The ledger is dispersed across several sites and is decentralised, replicated, and replicated. As all nodes maintain the consensus version of the ledger, this enables high availability (by eliminating one point of failure) and third-party verifiability.

(iii) **Distributed Consensus:** A distributed consensus protocol to work out who can append subsequent new transaction to the ledger. A majority of the network nodes must reach a

consensus before any new proposed block of entries becomes a permanent a part of the ledger. These features are partially achieved through advanced cryptography, providing a security level greater than any previously known record-keeping system. Blockchain technology is therefore considered by many, including us, to possess a considerable potential as a tool for implementing a replacement modern voting process.

### Blockchain as a Service

The blockchain is an append-only data structure, where data is stored during a distributed ledger that can't be tampered with or deleted. This makes the ledger immutable. The blocks are chained in such how that every block features a hash that's a function of the previous block, and thus by induction the entire prior chain, thereby providing assurance of immutability. There are two differing types of blockchains, with different levels of restrictions supported who can read and write blocks. A public blockchain is readable and writeable for everybody within the world. this sort is popular for cryptocurrencies. a personal blockchain sets restrictions on who can read or interact with the blockchain. Private blockchains also are referred to as being permissioned, where access is often granted to specific nodes which will interact with the blockchain. additionally, to cryptocurrency, blockchain provides a platform for building distributed and immutable applications or smart contracts. Smart contracts are programmable contracts that execute themselves when certain circumstances are met. Smart contracts are utilised as a legally enforceable agreement between parties, similar to traditional written contracts. Smart contracts automate transactions and permit parties to succeed in agreements directly and automatically, without the necessity for a middleman. Key benefits of smart contracts compared to standard written contracts are cost saving, enhanced efficiency and risk reduction. Smart contracts redefine trust, as contracts are visible to all or any the users of the blockchain and may, therefore, be easily verified. during this work, we define our e-voting system supported smart contracts.



**Fig 1 Voting Block**

## 2. PROPOSED SYSTEM DESIGN FOR DIGITAL VOTING

Based on the defined voting needs and blockchain as a service, this section presents a new e-voting system. We describe the blockchain's setup, specify the e-voting smart contract that will be put on the blockchain, and demonstrate how the proposed system meets the envisioned voting requirements.

### **A. Setup of the blockchain.**

In order to satisfy the privacy and security requirements for e-voting, and to make sure that the election system shouldn't enable coerced voting, voters will need to choose a supervised environment. In our work, we setup a Ethereum blockchain to realize these goals. Ethereum uses an algorithm that delivers comparatively fast transactions through a consensus mechanism supported identity as a stake. the rationale for using Ethereum is it is the world's first programmable blockchain. Ethereum is a version of Bitcoin, with a few key modifications. Both allow you to use digital money without the usage of third-party payment services or banks. But Ethereum is programmable, so you'll also use it for many different digital assets – even Bitcoin. This also means Ethereum is for quite payments, it is also a marketplace of monetary services, games and apps that can't steal your data or censor you. Ethereum makes use of Solidity, a statically typed curly-brace programming language developed for creating Ethereum smart contracts. After setting a secure and personal blockchain, subsequent step is to define and deploy a sensible contract that represents the e-voting process on the blockchain infrastructure.

### **B. Election as a sensible contract**

Defining a sensible contract includes three parts:

- (1) identifying the roles that are involved within the agreement (the election agreement in our case),
- (2) the process of reaching an agreement (i.e., the election process), and
- (3) the transactions (i.e., voting transaction) utilized in the smart contract.

1) Election roles: The roles during a smart contract include the parties that require to participate within the agreement. The election process has the subsequent roles:

- (i) Election administrator: Responsible for overseeing the election process. During this job, multiple trustworthy institutions and corporations may be enrolled. The election administrators are in charge of creating the election, registering voters, determining the election's duration, and assigning permissioned nodes.
- (ii) Voter: a person who is eligible to vote. After an election, voters can authenticate themselves, load election ballots, cast their vote, and verify their vote.

2) Election process: In our work, each election process is represented, by a group of smart contracts, which are deployed on the blockchain by the election administrators. a sensible contract is defined for every of the voting districts.

The following are the most activities within the election process:

- (i) Election creation: Election administrators create election ballots employing a smart accept which the administrator defines an inventory of candidates for every voting district. District nodes receive access to communicate with their respective smart contract after the smart contracts are placed onto the blockchain.
- (ii) Voter registration: The registration of voter's phase is conducted by the election administrators. When an election is made the election administrators must define a deterministic list of eligible voters. This might require a component for a government document identification service to securely authenticate and authorize eligible individuals. Using such a service is important to satisfy the need of secure authentication as this is often not guaranteed, by default, when employing a blockchain infrastructure. In our work, for every eligible voter, a corresponding identity wallet would be generated. a singular wallet is generated for every voter for every election that the voter is eligible to participate in.
- (iii) Tallying results: The tallying of the election is completed on the fly within the smart contracts. Each ballot smart contract does their own tally for his or her corresponding location in its own storage.
- (iv) Verifying votes within the voting transaction, each voter receives the transaction ID of his vote. In our e-voting system, voters can use this transaction ID and attend a politician election site (or authority) employing a after confirming themselves with their electronic identification, they use a blockchain explorer to locate the transaction with the appropriate transaction ID on the blockchain. As a result, voters may see their votes on the blockchain and double-check that they were listed and counted appropriately. This type of verification meets transparency standards while preventing vote tampering.

3) Voting transaction: Each voter interacts with a ballot smart contract for the voting district to which she belongs. The associated district node communicates with the blockchain using this smart contract, appending the vote to the blockchain. For verification purposes, each voter obtains a transaction ID for his or her vote. Every vote that is mandated by the majority of district nodes is recorded as a transaction and subsequently added to the blockchain. In our suggested system, a transaction contains data on i) the transaction ID, ii) the block which the transaction is found at, iii) to which smart contract the transaction was sent – which indicates from which voting district the vote was cast, and iv) the worth of the transaction, i.e., the vote, indicating which entity (party) the voter voted for.

As a result, in today's world, the idea of adapting digital voting techniques to make the public political process cheaper, faster, and easier is appealing. Making the voting process inexpensive and quick normalises it in the eyes of voters, lowers a power barrier between the voter and the elected official, and puts pressure on the elected official. It also allows for a more direct type of democracy by letting people to voice their preferences on specific initiatives and propositions.

### 3. CONCLUSION

Trusted elections are essential for strong democracies, and citizens should have faith in the electoral system. Traditional paper-based elections, on the other hand, are untrustworthy. We presented a blockchain-based electronic voting system that uses smart contracts to provide secure

and cost-effective elections while maintaining voter privacy in this study. We've demonstrated that blockchain technology provides a new way to overcome the limits and adoption obstacles of electronic voting systems, ensuring election security and integrity while also laying the foundation for transparency. It is feasible to transfer hundreds of transactions per second into an Ethereum private blockchain, employing every component of the smart contract to lighten the burden on the blockchain.

## References

1. Vitalik Buterin. (2015). Ethereum White Paper Available at: <https://github.com/ethereum/wiki/wiki/White-Paper>.
2. Ethdocs.org.(2018). What is Ethereum? Ethereum documentation. Available at: <http://ethdocs.org/en/latest/introduction/what-is-ethereum.html>.
3. Nicholas Weaver. (2016). Secure the Vote Today Available at: <https://www.lawfareblog.com/secure-vote-today>.
4. TechCrunch, (2018). Liquid democracy uses blockchain to fix politics, and now you can vote for it. Available at: <https://techcrunch.com/2018/02/24/liquid-democracy-uses-blockchain/>
5. Solidity Documentation. Available at: <https://docs.soliditylang.org>

# Flappy Bird Game Using Python

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## 1. Introduction:

**Flappy Bird** is a mobile game developed by Vietnamese video game artist and programmer Dong Nguyen, under his game development company Gears. The game is a side-scroller where the player controls a bird, attempting to fly between columns of green pipes without hitting them.

## 2. History:

Flappy Bird was originally released on May 23, 2013 on the Apple App Store with little success. Although this would change after the game was being reviewed by the Swedish Youtuber PewDiePie, who noted on how incredibly frustrating yet addicting the game was.

After PewDiePie's review was uploaded on late December 2013, Flappy Bird's popularity has dramatically exploded. In January 2014, it topped the Free Apps chart in the US and Chinese App Stores, and later that month topped the same section of the UK App Store where it was touted as "the new Angry Birds"<sup>[3]</sup>. The Android version of Flappy Bird was released to the Google Play store on January 30, 2014, and would have reached over 10 millions of downloads in just a week before its removal.

## System Requirements:

- Python 3.7 with Pygame library installed
- OS: Windows 7/8/10
- Minimum RAM of 512 MB
- Storage: 20MB of Available Space
- Processor: Any
- Graphics: Any

## 3. Gameplay:

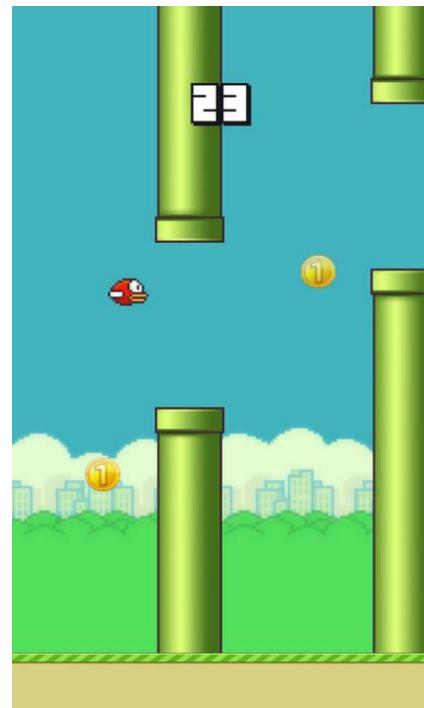
Flappy Bird is an arcade-style game in which the player controls the bird Faby, which moves persistently to the right. The player is tasked with navigating Faby through pairs of pipes that have equally sized gaps placed at random heights. Faby automatically descends and only ascends when the player taps the touchscreen. Each successful pass through a pair of pipes awards the player one point. Colliding with a pipe or the ground ends the gameplay.

## Our Flappy Bird game in action:

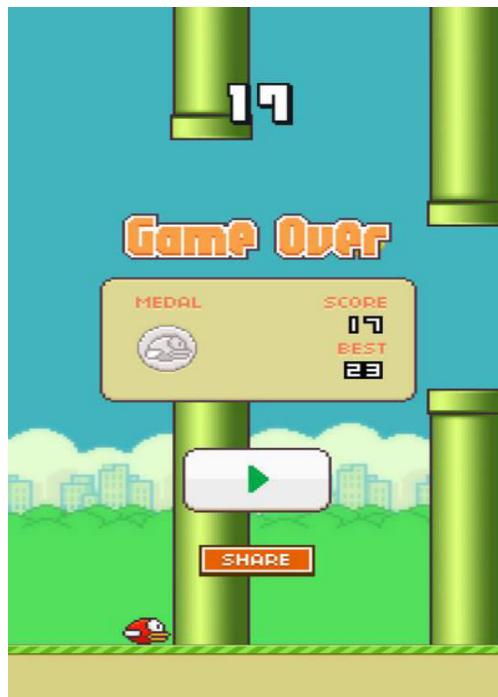
- 1) The initial screen of the game:



- 2) After a first touch on the screen, the game starts and you have to try to move the bird forward by avoiding the pipes to score as many points as possible.



- 3) Finally, if the bird hits a pipe or touches the ground, the game is over and the end of game screen is displayed

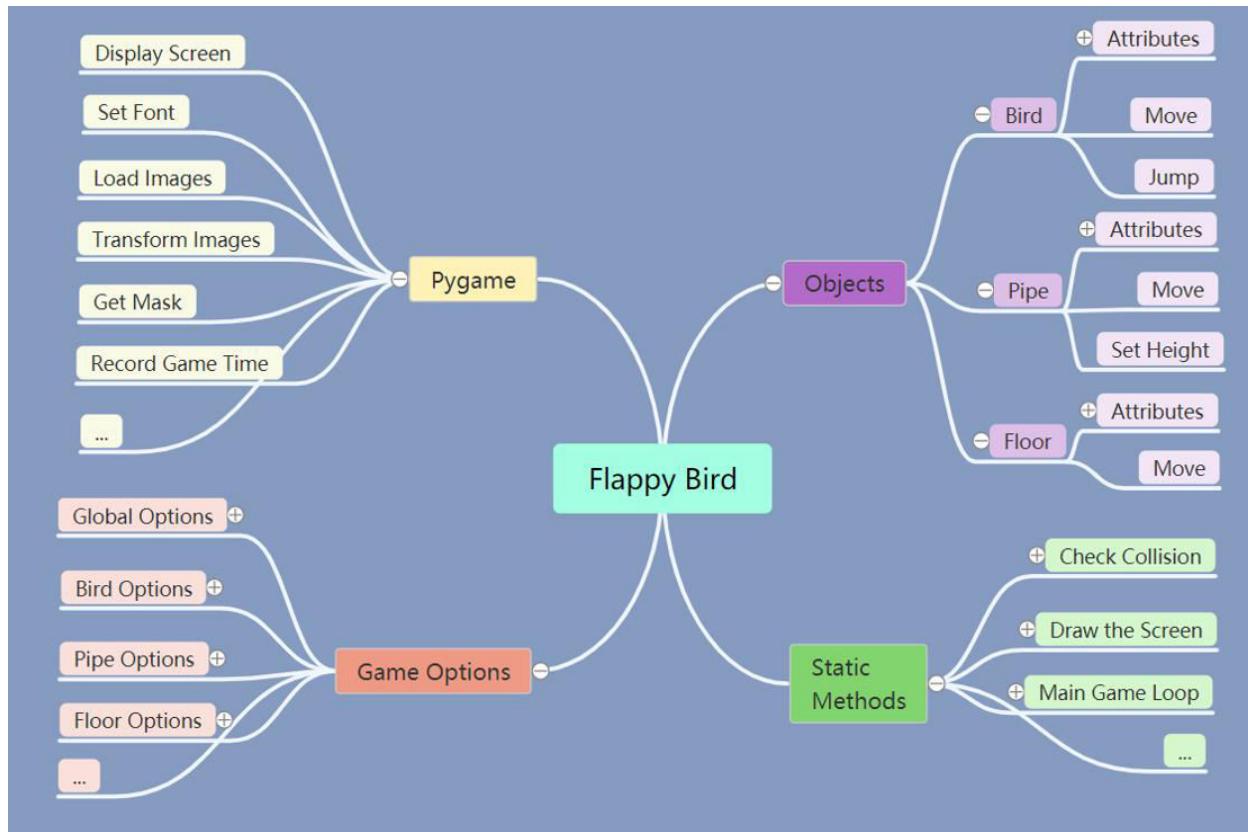


The Flappy Bird Game - Highest Score is 999!

Further Changes to make this game quite attractive and popular one is :  
(According to me if we add this certain points it could attract more users :)

- 1) We can even add levels after scoring certain minimum points ,and this can enhance the popularity of this game by attracting more users in way of achieving more levels.
- 2) we can increase or decrease the size of pipes ,for increasing the complexity of this game and also making it more interesting.
- 3) we can even add different colour pipes from perspective of catching attraction of users.
- 4) We can even add pop-ups after certain intervals of scoring few points to encourage the user for playing further.

#### 4. FLOW CHART:



#### 5. MODULES:

In this game, the main objective of the player is to gain the maximum points by defending the bird from hurdles.

We will be using these modules to create this Flappy Bird game

##### Module Description:

1)Random module: random() function, which generates random numbers between 0 and 1.

2) Pygame module: Pygame library is an open-source module for the Python programming language specifically intended to help you make games and other multimedia applications. Pygame can run across many platforms and operating systems.

3)Sys module : For function of sys module we will use sys.exit to exit the program.

4)Module for global variables: This module is for the global variables for the game.

5)welcome main screen module : It is for the function of welcome main screen. It shows welcome images on the screen

6)main game play module : It is for the function of main gameplay of a game. It Creates 2 pipes for blitting on the screen. Includes the list of upper and lower pipes. Checking for score function, add a new pipe when the first is about to cross the leftmost part of the screen.

7)get random pipes module : This module is used for the function of get random pipes. It Generate positions of two pipes(one bottom straight and one top rotated ) for blitting on the screen.

8)image module : It is used for the function of images to be use in a game.

9)sound module: It is for the function of sound/audio use in a game.



#### 6. Legacy:

Just a few days after its removal, Flappy Bird became one of the most cloned games in Apple's App Store. In only 2 days after its removal, there are over hundreds of clones of Flappy Bird on the App Store.

At the peak of its popularity, over 60 clones per day were appearing on the App Store, prompting both Google and Apple to begin rejecting games with the word "Flappy" in the name for a while.

Shortly after the game's removal, security researchers warned that some versions of Flappy Bird and its imitators available on alternative Android app stores have been found to contain malware

that can lead to unauthorised charges to a user's phone bills. The number matching game Threes! has been compared to Flappy Bird because of the similarities between how people react to them and by the chain of clones that they are both respectively part of.

As of 2020, it is estimated that over 200,000 Flappy Bird clones were published on App Store and Google Play.

### **7. Conclusion:**

From my Perspective, this game is a stressbuster. It rejuvenates mind of people. It's been scientifically proven that people who play video games have better spatial coordination and fine motor skills than those who don't. Not only will this make you more coordinated in your everyday life, but it could also help you be a better driver, keep your eyesight from failing and make you more intelligent.

### **References:**

- 1) [https://en.wikipedia.org/wiki/Flappy\\_Bird](https://en.wikipedia.org/wiki/Flappy_Bird)
- 2) <https://www.google.com/url?sa=i&url=https%3A%2F%2Fhackanons.com%2F2020%2F09%2Fflappy-bird-with-python-using-pygame-library.html&psig=AOvVaw0GfSjK6PDUDNpi8oqJBEIV&ust=1638453808838000&source=images&cd=vfe&ved=0CAsQjRxqFwoTCJDfmZ7iwvQCFQAAAAAdAAAAABAD>
- 3) <https://youtu.be/itB6VsP5UnA>

## Gas Leakage Detection with GPS navigation

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### ABSTRACT

In this paper a Gas leak detection security system has been implemented for identifying gas leakage in closed environment. The leakage can be identified by using various sensors. However, many such cases can lead to a loss of properties and harm human life. The implementation of this approach is useful for many companies, house owners and car owners which can save lives. This can be also used as an application in chemical and hazardous industries where there is a continuous need of monitoring gas leaks. We can find the different types of gas leak with the help of different types of sensors. This system will be super-efficient for car or the persons who drives. Many times, such situation has occurred where people carelessly leave their children or pets locked inside their car which can result into death by suffocation due to harmful gas. This system will be useful here as it will detect such leaks and send an alert to three different personals which also includes fire department. Such leaks can cause a huge blast. This system will counter such incidents by sending the exact coordinates of the location to the emergency department and the owner of the vehicle.

**Keywords:** *Gas leak, Leak detection*

### 1. INTRODUCTION

LPG gas is a mostly used gas in the resident and urban sector as it is not costly and easily available. LPG gas can be used in the vehicles like car, rickshaw and at different service station. The gas is heavier than normal air and stay at the low-level and spread fastly in case leakage occurs. A continuous monitoring is required for the safety measures at industrial and residential areas. Sometimes, A gas leakage from cylinder may cause damage to the human life. LPG gas Sensors are used to overcome such problem in day-to-day life.

### LITERATURE SURVEY

A monitoring system for gas leakage is important for the security of human being. Nowadays, wireless sensors network and integrated system have been widely used for detecting gas-leakage in present environment [1].

Somov A, Baranov A, Spirjakin D, et, al. used Wireless Sensor Networks (WSNs) along with catalytic gas sensors and ZigBee module implemented and used in many factories. Response under various scenarios are collected from catalytic gas sensors, and calculated result based on the Received Signal Strength Indicator and Link Quality Indicator metrics [2].

Jain P C, Kushwaha R identified various WSNs with semiconductor sensors and ZigBee module for residential areas like residents and industrial pipelines of oil and gas. Investigations are conducted to study the interaction between sensors and coordinator [3].

Frish M B, Wainner R T, Green B D, et al implemented a gas leakage detection system based on Tunable Diode Laser Absorption Spectroscopy (TDLAS) and calculated its usefulness in real time environment [5].

Xu B, Yu D, Wu J, et al have suggested a airborne infrared laser leak detection technology, and illustrated the airborne infrared laser leak detector can identify the leakage when the helicopter flies with the rate of 30-50m/s and the flight height less than 80m. [6].

#### **PROBLEM STATEMENT**

To avoid explosion due to gas leakage or death by suffocation from gas leakage. Improvised version of gas leak detector.

- Less effective and time consuming
- Cost is very high
- SMS alert can be ignored which can result into explosions

#### **2. OBJECTIVE**

The different gas sensors will be used for the detection of a dangerous gas leakage in various gas station, cars, storage tanks and homes. The circuit are built with sensor attached with alarm to give an alert to the operators through a buzzer sound in the region where the gas leak is occurring. This system also helps us to detect the different types of gases like cigarette smoke, toxic gases, combustible, LPG etc.

The main objectives of our proposed system are as follows:

1. Monitoring Gas leakage
2. Providing a sensor to detect various types of gas.
3. To detect harmful gas leaks and send an alert to respective personals which includes fire department
4. To raise knowledge about gas leakage and their consequences so that people can be careful in the future.

#### **PROPOSED METHOD**

The objective of the proposed system is to implement a smart automatic gas leakage detection system. It is specifically used for homes, offices, industries etc. The alert system will be installed at each floor of the buildings and used to identify the gas leakage also sensors are used for detecting leakage. The main idea is to design a low-cost system that will be easily manufactured and portable yet systematic gas leakage detection system that make sure security for households, offices and industries.

If the gas level crosses the threshold level, then user will receive the SMS through GSM. The system turns on the buzzer to notify the person nearby to the system and also at the same time Relay is turned on. As Arduino is having an inbuilt Analog to Digital converter system that is why need not to connect any external devices.

This system is benefits in cases when there are senior citizens, small children in house. Due to carelessness, there might be gas leakage which can lead to measure accidents. The system can avoid such incidents by sending an alert SMS to the house owner or by turning Buzzer at the same time

At the same time the user receives the coordinates of the location through sms alert so that it will be easy to track down the user if he is driving or at steady state.

This system will help user who accidentally leaves their children and pets locked inside their car.

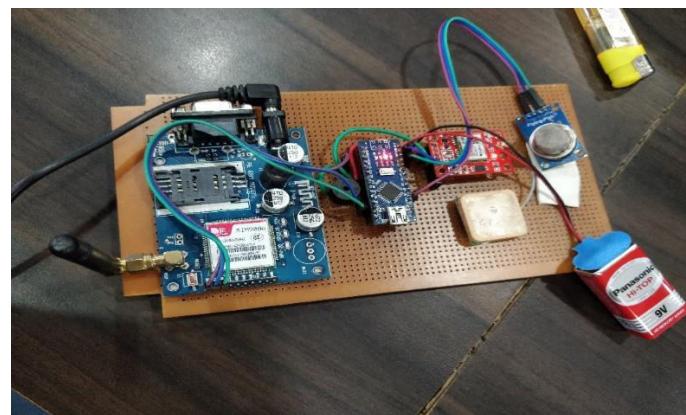
The fire department or the emergency service provider will also receive this alert with GPS coordinates so that it will be easy to track down the spot.

If implemented correctly this system will extremely useful for companies, households or user who drives etc.

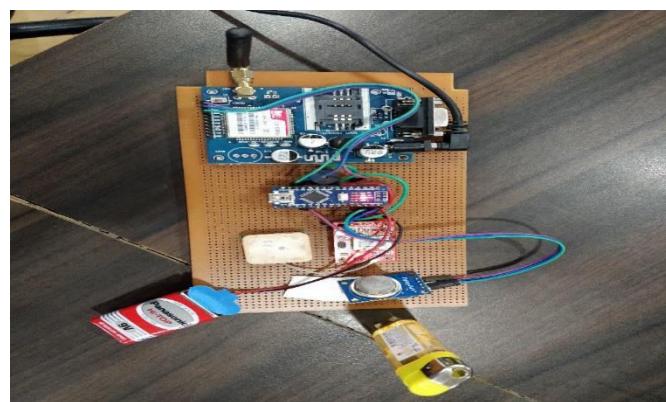
The systems consist of following components like:

- 1. Arduino Nano**
- 2. Micro Controller**
- 3. Gas Sensor**
- 4. Weight Sensor Display**
- 5. GSM modem**

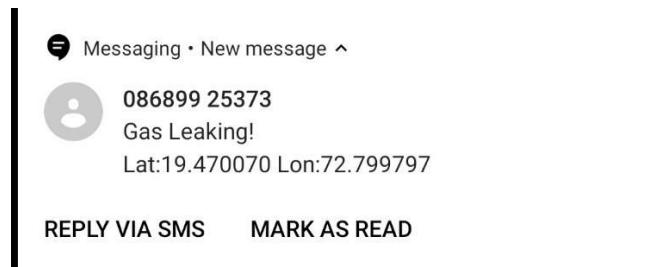
## RESULTS and DISCUSSION



**Figure 1: Arduino Nano**



**Figure 2: Circuit Diagram**



With the help of this message user can be alerted about the gas leak and user can take necessary precautions to avoid it. With the help of GPS coordinates it will be easier to track down the location of the spot where gas leak occurred.

### 3. CONCLUSION & FUTURE WORK

Gas leakage leads to severe accidents which results in human loss and it occurs mainly due to bad maintenance of equipment's and less awareness of the people. The system plays an important role to prevent accidents and to save human lives. The system is simple and reliable.

Advantages of this system:

- If there is any gas leakage it will be detected automatically and will avoid accidents
- People and companies will be aware about the gas leakage advantages and disadvantages.
- Real time notification of gas leakage and location through SMS.
- Security system will boost up and people be aware about the consequences.

The current system can be further enhanced by making the use of Bluetooth instead of GSM which can be used to send the alert messages to user. Robot can also be used for detecting multiple gas concentrations. Along with this temperature sensor can be used for identifying high pressure gas in cylinder pipe and if temperature is reached at high level, it will generate an alert message to inform peoples.

### REFERENCES

1. Attia, Hussain A., and Halah Y. Ali. "Electronic Design of Liquefied Petroleum Gas Leakage Monitoring, Alarm, and Protection System Based on Discrete Components." *International Journal of Applied Engineering Research*, vol. 11, no. 19, pp. 9721-9726, 2016
2. Saeed H, Ali S, Rashid S, et al. Reliable monitoring of oil and gas pipelines using wireless sensor network (WSN)—REMONG[C]//System of Systems Engineering (SOSE), 2014 9th International Conference on. IEEE, 2014: 230-235.
3. Jain P C, Kushwaha R. Wireless gas sensor network for monitoring of harmful gases in utility areas and industries[C]//Sensing Technology (ICST), 2012 Sixth International Conference on. IEEE, 2012: 642-646.
4. Tan Q, Zhang W, Xue C, et al. Design of mini-multi-gas monitoring system based on IR absorption[J]. *Optics & Laser Technology*, 2008, 40(

5. 703-710. 5. Frish M B, Wainner R T, Green B D, et al. Standoff gas leak detectors based on tunable diode laser absorption spectroscopy[C]//Optics East 2005. International Society for Optics and Photonics, 2005: 60100D-60100D-9.
6. Xu B, Yu D, Wu J, et al. Research on Infrared Laser Leak Detection for Natural Gas Pipeline[C]//2012 9th International Pipeline Conference. American Society of Mechanical Engineers, 2012: 711-715.
7. Mahalingam, A., R. T. Naayagi, and N. E. Mastorakis. "Design and implementation of an economic gas leakage detector." Recent Researches in Applications of Electrical and Computer Engineering, pp. 20-24, 2012.
8. Apeh, S. T., K. B. Erameh, and U. Iruansi. "Design and Development of Kitchen Gas Leakage Detection and Automatic Gas Shut off System." Journal of Emerging Trends in Engineering and Applied Sciences, vol. 5, no. 3, pp. 222-228, 2014.
9. T. Soundarya J.V. Anchitaalagammai, G. Deepa Priya, S.S. Karthick kumar, "C-Leakage: Cylinder LPG Gas Leakage Detection for Home Safety," IOSR Journal of Electronics and Communication Engineering, vol. 9, no. 1, Ver. VI, pp. 53-58, Feb. 2014.
10. Ashish Shrivastava, Ratnesh Prabhaker, Rajeev Kumar, Rahul Verma, "GSM based gas leakage detection system." International Journal of Emerging Trends in Electrical and Electronics, vol. 3, no. 2, pp. 42-45, 2013
11. Somov A, Baranov A, Spirjakin D, et al. Deployment and evaluation of a wireless sensor network for methane leak detection[J]. Sensors and Actuators A: Physical, 2013, 202: 217-225.
12. Aamo, O., Salvesen, J., & Foss, B. (2006). Observer design using boundary injections for pipeline monitoring and leak detection. In Proc. IFAC Symp. Adv. Control Chem. Process (pp. 2e5).
13. Meng, L., Yuxing, L., Wuchang, W., & Juntao, F. (2011). Experimental study on leak detection and location for gas pipeline based on acoustic method. Journal of Loss Prevention in the Process Industries, 25(0), 90e102.

# **Scrutinization And Analysis On Detailed Description Of Human Resources Management Of Overseas Industries Relating To Recruiting And Head Hunting And Influential Outcome Of Travel And Related Industry Due To IT Industry.**

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## **ABSTRACT**

The purpose of this paper is to provide a review of the strategic human resources management (HRM) and travel industry literature from the points of view of both general management and hospitality and tourism and overseas recruitment and abroad study and concerns regarding counterfeiting of travelling documents from a international boundaries visa to a flight Itinerary Design and job offers verification .

methodology/approach of the paper provides a critical, qualitative and comparative review of the strategic HRM research in the fields of general management and hospitality and tourism and travel agency and industry providing insights into emerging research trends and pointing to the gaps in the IT communication and candidates relative views . Findings The results of the review showed streams of research from the hospitality and tourism and travel industry of human capital and firm performance, high-performance HRM practices and performance, international/global issues and strategic HRM, individual HRM practices and performance, qualitative reviews of the hospitality and tourism HRM and country-specific strategic HRM. This review also points to the gaps between the two bodies of a recruitment firms, job offering industry and gives recommendations for future research. Practical implications The current conceptual model provides a useful framework for examining how strategic HRM practices impact firm performance through macro (organizational) and micro (individual) levels. The current review illustrates the important role that frontline managers have in delivering HRM practices. Originality/value This review provides a conceptual model for future research and practical implications also the how conceptual and influential is IT to the travel industries what are the normal and matter of concern for the travel agency and job offering recruitment firm and discusses brief analysis on the job offer scam and document counterfeiting in the recruitment and travel industries.

## **1. INTRODUCTION**

### **Glossary ( TRAVEL AGENCY AND HRM)**

HRM industries and HRM consultancies are the factor that is responsible for empowerment of people, a tremendous scope for job enrichment and a passion for perfection in every aspect of commercial and business needs . It is also the industry that defines the work progress and enhancement of a development of country by emphasizing and exercising talent hunting and

scrutinize the resultant for the best services possible and also achieve employment of every sector and field of life and run through processes it provides various overseas and in house opportunities and is also one of the main source of boosting the canonical economy of the country , it is one of the reason that global relationship are being empowered and globalization is seen the ultimate boost and it shows that different aspect of work and culture ethics tradition can come together and live and work at once.

Travel agency is one of the most important organizations in the tourism private sector which plays a significant and crucial role in the entire process of developing and promoting tourism in the country or at a destination. It is a travel agency which packages and processes all the attractions, accesses, amenities and ancillary services of a country and present them to tourists. That's why travel agency is known as 'image builder' of a country.

The travel services sector is made up of a complex web of relationships between a variety of suppliers, tourism products, destination marketing organizations, tour operators, and travel agents, among many others.

Employment scam is one of the serious issues in recent times addressed in the domain of Online Recruitment Frauds (ORF). In recent days, many companies prefer to post their vacancies online so that these can be accessed easily and timely by the job-seekers. However, this intention may be one type of scam by the fraud people because they offer employment to job-seekers in terms of taking money from them. Fraudulent job advertisements can be posted against a reputed company for violating their credibility. These fraudulent job post detection draws a good attention for obtaining an automated tool for identifying fake jobs and reporting them to people for avoiding application for such jobs.

This application is develop to provide best travelling and recruiting or head hunting and requirement services to customers and travel agency as well as recruitment agents. We have developed this project system to provide a search platform where a tourist can find their tour places according to their choices. This system helps to promote responsible and interesting tourism and placement sector and employment medium so that people can enjoy their holiday at their favourable destination and have their rightfully deserved placement and jobs in their desired sectors. This also helps to develop tourism with different cultures , ethics and morals so that they enrich the tourism experience and have a abroad working experience and build pride and connect emotional support with super charging roads if fastly growing world. We develop this system to create and promote forms of tourism that provides healthy interaction opportunities for tourists and locals to build legal trust and beneficiaries in the fields of travelling and employment industry that is HRM management industry

There are listed documents required while going on a tour, especially on a foreign trip. Travel documents such as passport, VISA (It is an endorsement on a passport indicating that the holder is allowed to enter, leave, or stay for a specified period of time in a country), health certificates, vaccination, insurance, foreign currency etc. It takes time to get the VISA clearance from the

concerned embassies. All such functions are handled by travel agencies and tour operators to help their clients a hassle free travel. Travel documents are very essential. If they are not in proper order, tourists may find themselves in big trouble, particularly on foreign trips. They may not be allowed to enter the country if documents are not in proper order a lot of them face issues because of tampering and counterfeiting of these documents which result in huge loss of money and time and morals we have assured every possible help in this project and also there is a special fastline for the same.

## **2. OBJECTIVE :-**

1. The main objective of this title and creating a website is validation and verification of the benchmark of every travel agency and HRM Consultancies work, ethics process and agenda also their document verification and singular manipulation and cross – verification of overseas job .

For example :- Job offer letter, visit visa , companies profiling and job authentication and verification.

2. The website that people may come across while web searching Or browsing for their travel requirements Or looking for jobs may be full of bugs Or unethical scam Or even if they are genuine they only give a one way means of communication .

3. The main purpose and objective of this website is built a responsive website with a additional fastline service that would respond to customer problem and verify and adhere their concern to the fullest.

Fastline is a technically built in feature of the website that works on CCE executive which helps in verifying any documentation and originality of a profiling and any industrial based claim and offers.

## **PROBLEM STATEMENT :**

As mentioned in the objective of the project the main focus is to attract people and help them put with their queries about travelling and recruitment process also this is a real address to the fake, malicious, and fraud that the customer are facing due to counterfeit of their documents and also false job letters and other accommodating offers and objective documents so we would develop a simple but effective helpline in the website known as fast line in which we would verify the documents if the customer is willing to question it's creditinals via mail Or given services in the website plus they can enjoy a genuine website full of travel experience and valid job requirements and recruitment.

The problem arising in developing this website is a challenge of adding additional feature and provide uniqueness and significant coding and a hefty and Reasonable sense of marginal errors and bugs that we may come across while developing it also to ensure that this is devoid of any bugs or unexpected cons or disruption in services.

### **Research and Methodology (Case Studies) :-**

1. Information Research and analysis.
2. Data and news and online article manipulation.
3. Physical and virtual confrontation with clients and their various experiences.
4. Documentation and Spiral thorough research of valid document and humanitarian ground for errors and having skills and complete information about market and research analysis.
5. Results and previous and new forms of scams and their various themes on which it is based.

#### **Description about the above points are as follows.**

Fake job rackets have become a booming industry, thanks to shrinking jobs in private as well as public sector and hordes of students passing out of low-quality professional colleges. According to the Centre for Monitoring Indian Economy, India's unemployment rate in April 2019 shot up to 7.6%, the highest since October 2016. Combined with easy accessibility of the Internet, this has come as a boon for job scammers, who are offering non-existent jobs to desperate youth. "Students fresh out of college, from one of the thousands of engineering colleges in small towns, are easily trapped. Their parents have invested Rs 4-5 lakh and now want the kids to earn big money. Foreign jobs, especially in the Gulf, are coveted," says Bilal Hasan, Head of Sales, Quetzal & Head Honchos

Little wonder then that embassies, companies and job portals have started putting up advisories on their websites to warn the applicants. On 28 April, the Indian embassy in Qatar tweeted: 'Please do not trust any recruiting agent who promises you a job in Qatar on a business/visit visa. Always ask for a copy of the agent's Qatar ID.' Groups such as Tata Consultancy Services, Shell and Monster.com have also put up warnings on their sites. If you are also looking for jobs, here's how to avoid being duped by scamsters.

For most scamsters, online job portals are a popular haunt to find prey. Here's how they proceed:

1. Applicant profiles accessed from job recruitment sites
2. Mass mailers sent to potential candidates.
3. Fraudsters pose as job consultants, set up fake websites, temporary 'offices'.
4. Candidates are asked to deposit registration fees via wallet or bank transfers.
5. Online or telephonic interviews are conducted.
6. Fake appointment letters are offered.

#### **Victims Profile**

These are the type of people who are most likely to fall prey to job scams

- Mostly from tier 2 or tier 3 cities

- Graduate from lesser known colleges or institutes
- Poor interpersonal communication skills
- 0-5 year work experience
- In their early to mid-20s
- Not good at written or spoken English
- Not very skilled at their jobs; low professional expertise
- Have applied on job portal

### **MODUS OPERANDI OR APPROACHES :**

Scammers adopt different approaches to find and nail their prey.

#### **Phishing & Mailing :**

This is probably the easiest way for racketeers to find victims en masse (*see Modus Operandi: Steps*). “By posing as freelance job consultants, they scour multiple job portals like Monster, Naukri, Times Jobs and Shine to get access to their databases,” says Hasan. They then send mass mailers and, even if they dupe 5% of job-seekers, they make a lot of money. The mails typically ask for a security deposit, interview fee or other charges, a prerequisite for scheduling an interview. While some fraudsters disappear as soon as they get the money, others go so far as to conduct a quick online or telephonic interview before allotting a fake appointment letter.

**Fake websites :** Duplicate websites of reputed companies, job portals or government departments are created to mislead applicants. “They then post fake jobs, conduct tests and upload results, before charging the successful candidates for clearing the interview,” says Neeti Sharma, Senior Vice-President, TeamLease Services. Some even go so far as to set up temporary offices, hiring staffers, conducting interviews, allotting appointment letters and charging fees in instalments.

**Campus placement :** Scammers pose as job consultants and directly contact the chairmen of colleges or institutes in small towns. They promise placements in top and reputed firms, and charge a lump sum. They mostly vanish before conducting the promised interviews.

#### **Hall of Infamy : Hiring scams**

##### **1.Ghaziabad Scam**

In June 2018, three men were arrested from Kavi Nagar in Ghaziabad for cheating hundreds of job seekers over two years.

Amount: Rs 3.5 crore

## 2. Hyderabad Scam

In June 2018, three men were held in Hyderabad for extracting Rs 2 lakh each from 60 unemployed youth in three months.

Amount: Rs 1.2 crore

Measures one can take and what we provide for that as a solution:-

Here is the checklist you should follow to foolproof your job selection process.

Go to authentic, official websites: Most companies advertise new job positions on their official websites. So, instead of replying to dubious mails, go to the career page of the company and apply directly on the site. “In case of online job portals, make sure you are routing your resumes via the original sites, not responding to a link provided in a mail. “For foreign jobs, you should either go to government portals, or local job consultant websites in the country you are applying for a job,” says Hasan. Do not approach ‘agents’ in India to secure a foreign job posting.

Post CVs with specific job positions: While posting your resume on job portals, make sure that the CV is written for the specific post you want. “Prepare the CV and cover letter so that they match the jobs you’re applying for and list only the relevant, recent job experiences,” stated in an article of economic times on 10 January.

Our website developed is not based on b2b portal has only registered means of source that we trust and rely on also the main executive are the one handling all verification and responses through fastline so it as effective and the customer or the in need candidate can assume and get full use of the source of commodity that is available to him.

You may get a call, a text message, or a flyer in the mail Or maybe you may see an online ad promising free or low-cost vacations. Scammers and dishonest people are often behind these offers. You may end up paying hidden fees — or worse: after you pay, you might find out it’s all a scam.

### Common Travel Scams

#### Free” vacations

You’ve probably seen ads online for “free” vacations. Or you may have gotten emails, calls, or text messages saying you’ve won a vacation, even though you never entered a contest. If you respond to these offers, you’ll quickly learn that you have to pay some fees and taxes first — so your “free” vacation isn’t really free. A legitimate company won’t ask you to pay for a free prize.

#### Robocalls about vacation deals

You might get robocalls offering you vacation deals at a discounted price. Robocalls from companies trying to sell you something are illegal unless the companies got written permission, directly from you, to call you that way. If someone is already breaking the law by robocalling you without permission, there’s a good chance it’s a scam. At the very least, it’s a company you don’t want to do business with.

#### International travel document scams

You might see sites that claim to be able to help you get an international travel visa, passport, or other documents. These sites are just copycats of the U.S. Department of State website. But these sites charge you high fees, including fees for services that are free on the government's official site.

#### International driving permit scams

An international driving permit (IDP) translates your government-issued driver's license into 10 languages. Scammers create websites to sell fake IDPs, or try to sell them to you in person or some other way. If you buy a fake IDP, you'll be paying for a worthless document. But, even worse, you also could face legal problems or travel delays if you're detained for using it to drive in a foreign country. Only the U.S. Department of State, the American Automobile Association (AAA), and the American Automobile Touring Alliance (AATA) are authorized to issue IDPs.

#### Vacation home scams

These days, it's easy to connect directly with property owners who advertise their vacation homes online. But scammers are also trying to get your rental booking. For example, they hijack real rental listings and advertise them as their own, so when you show up for your vacation, you find out that other people are also booked for the same property. You have no place to stay, and your money is gone. Other scammers don't bother with real rentals — they make up listings for places that aren't really for rent or don't exist.

#### Charter flight scams

You may get a flyer in the mail, see an ad, or hear from someone in your community about an offer to travel by private plane to some place you'd like to go. The offer may even include lodging and sightseeing tours. You think you're signing up for a charter flight and vacation package, but after you pay, you find out it's all a scam. The U.S. Department of Transportation's (DOT) Special Authorities Division maintains a list of approved public charter flights. If the charter filing is not approved by DOT before the package is sold, you're probably dealing with a dishonest charter operator.

#### Signs of a Scam

A "free" vacation that you have to pay for. Scammers often try to get your attention by saying you won something, but then making you pay to get it. But that's a scam. If you have to pay, it's not really free — and all those fees and taxes can add up to hundreds of dollars.

Not getting specific details about the travel offer. The offer says you'll stay at a "five-star" resort or go on a cruise on a "luxury" ship. But if the organizer won't or can't give you more specific details, like the address of the hotel or the cruise company name, walk away. That's a scam.

They say the only way to pay for your vacation rental is by wire transfer, gift card, or cryptocurrency. This is how scammers ask you to pay because once they've collected the money, it's almost impossible to get it back. That's a scam, every time.

Pressure to make a quick decision about a vacation package or rental. If someone says you have to decide whether to buy a travel package or rent a vacation property right away, don't do it. Scammers want to rush you. So move on and find another option.

Premium vacation properties advertised for super cheap prices. Below-market rent can be a sign of a scam. Do some extra research to confirm the deal is legitimate before jumping in. And then review these signs of a scam before you pay.

Also there various more scams running on the surface as the technical team heads the research to avoid it the summers intrude to find more into every aspect making it a vulnerable industry.

### 3. Overview:-

The overview of our developed site is as follows

1.login module :

Login information and credentials.

2.Booking:-

Reservation services partially active.

3.Packages :-

Various Package regarding tours and travels in various countries.

4.Services:-

Details of various services we offer.

5.Jobs and requirements :

Hot jobs and other new Requirements and recruiting processes

6.Gallery:

All Access to every digital aspects of our best features and also our achievement so far

7. Reviews, Branches, location and social links , contact branch locations and social media access pages only for viewing purposes.

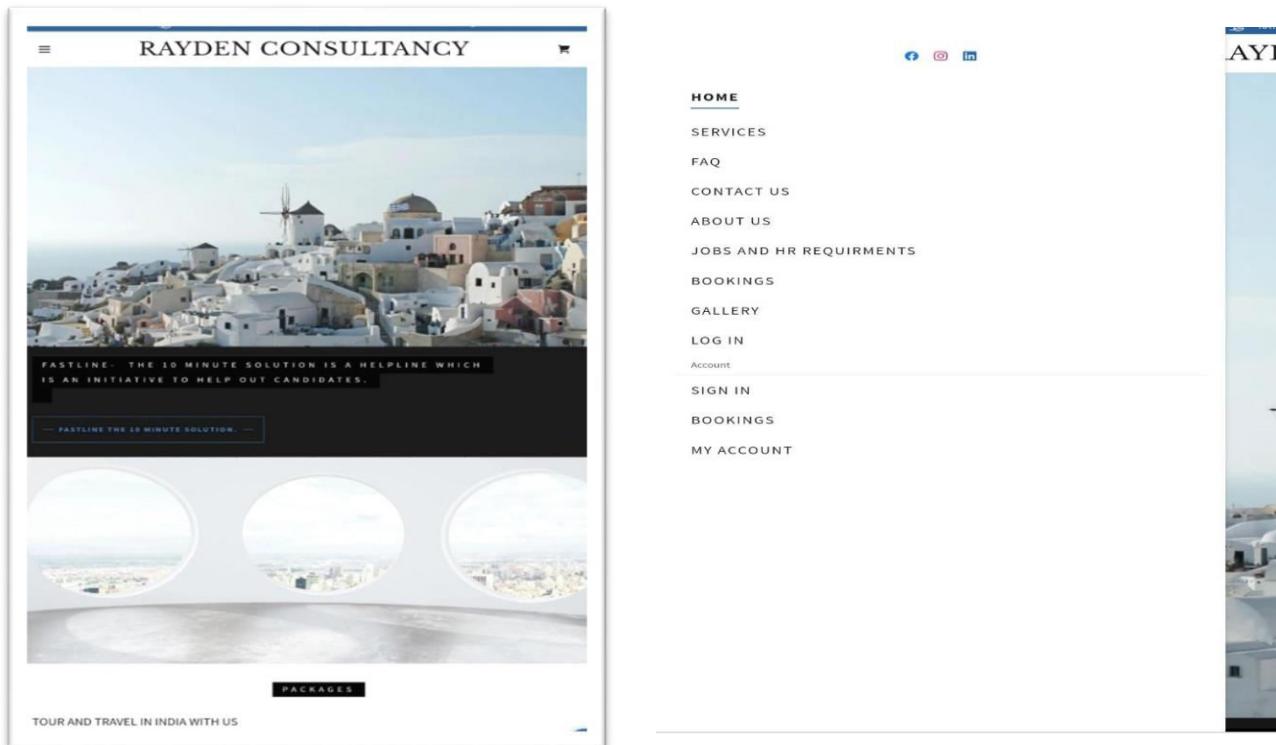
8.FASTLINE - THE 10 MINUTE SOLUTION :

The main theme of our website to avoid any types of scams and verification also consultation for any confusion or any services with any related topics of travelling and recruitment requirements.

9. Book Consultations :-

You can boom offline and online consultation and services which may be cost effective or free of cost according to needs. This is just an overview of site. Changes may be made and additional feature can be considered for the same.

For information you can visit our site.<https://raydenconsultancy.com>



#### References:-

1. <https://m.economictimes.com/wealth/earn/fake-job-offers-how-to-avoid-getting-duped-in-job-scams/articleshow/69173183.cms>
2. [https://www.researchgate.net/publication/312667897\\_Strategic\\_human\\_resources\\_management\\_research\\_in\\_hospitality\\_and\\_tourism\\_A\\_review\\_of\\_current\\_literature\\_and\\_suggestions\\_for\\_the\\_future](https://www.researchgate.net/publication/312667897_Strategic_human_resources_management_research_in_hospitality_and_tourism_A_review_of_current_literature_and_suggestions_for_the_future)
3. [https://www.researchgate.net/publication/341325717\\_Fake\\_Job\\_Recruitment\\_Detection\\_Using\\_Machine\\_Learning\\_Approach](https://www.researchgate.net/publication/341325717_Fake_Job_Recruitment_Detection_Using_Machine_Learning_Approach)
4. <https://www.consumer.ftc.gov/articles/avoid-scams-when-you-travel>
5. <https://www.mgheewala.x/job-seekers.php> <http://www.hrinternational.in/>

## Online Voting System Using Xampp Server

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### ABSTRACT

The **Online Voting System** is a web based application. The system has a centralized database to keep records of all the Voters and Candidates and Final Results. This web based system is time saving, work load reduced information available at time and it provides security for the data. During the election, the election commission of India has introduced a new method of polling by online voting system (OVS). The election commission will maintain this website. This is a simple, safe and secure method that takes minimum of time.

The word **VOTE** means to choose from a list, to elect or to determine. The main goal of voting (in a scenario involving the citizens of a given country) is to come up with leaders of the people's choice. Most countries, India not an exception have problems when it comes to voting. Some of the problems involved include ridging votes during election, insecure or inaccessible polling stations, inadequate polling materials and also inexperienced personnel.

### 1. INTRODUCTION

Online Voting is a web-based voting system that will help you manage your elections easily and securely. This voting system can be used for casting votes during the elections held in colleges, etc. In this system the voter do not have to go to the polling booth to cast their vote. They can use their personal computer to cast their votes. There is a database which is maintained in which all the name of the voters with their complete information is stored. Still since quite long time going to the polling booth and standing in long queue to cast vote has been persistent and it was challenging for the Government to motivate the public to participate in the election system and cast their vote, as there was no such online voting system available . But all the credit goes to the internet and the Software developers who are going to made it possible

soon for everyone to cast their vote to the candidate of their own choice with the unmatchable ease.

### 2. PURPOSE

Now as we all know, almost everything can be done online. Like Money transfer, Shopping, Booking, Teaching, Data sharing, Admissions, Job search, etc. And so many other activities are done with the help of internet. So with the

use of internet, we are going to take this existing voting system on advance level. We are going to develop an online platform with high security so that the same process could be done easily without the waste of time, afford, and energy. We are going to develop an online platform with high security so that the same process could be done easily without the waste of time, afford, and energy .So firstly, voters and groups/candidates are required to register on online voting system. Once registration is done, voter can easily vote to their respected candidate or group by just signing in with the comfort of his/her home. And similarly, groups/candidates can do the same as well as also monitor their status with the comfort of home. So this system will save a lot of time, energy, and afford for both voters and groups.

### 3. SURVEY OF TECHNOLOGIES

Some of the existing technologies are as follows:

- Udemy
- Khan academy
- Coursera
- W3schools
- TedEd
- Open Culture

### 4. REQUIREMENT AND ANALYSIS

#### 4.1 Problem Definition

The existing manual Voting system consumes more time for Vote Casting. Voter has to wait for vote polling station to vote for a right candidate. The election officers has to be check the voter , this voter can vote in this booth then check voter ID present in voters list of booth those are information will be present then the voter can vote in that booth. The voter had to stand in the queue to cast his vote. All the work is done in paper ballot so it is very hard to locate a particular candidate, some voters cast their votes for all candidates. To overcome of all these problems we have to implement a web application, which is helpful for Voting from anywhere.

#### 4.2 Functional Requirements

##### 1. Voters

Voters are the people who will first sign up on online voting panel. And then at the time of voting, they will login and do vote to their respective group or candidate via system.

Following data from voter side will be provided to the system at the time of registration:

- Name
- Mobile
- Address
- Status
- Votes

- Role (voter/group)
- Photo
- Password

**Voters responsibilities:**

- Registration on system
- Login to system
- Voting for the candidate

**2. System**

System is an online platform where election process is held. So the voters and groups are registered here. And with the help of system, voters can do voting and groups can monitor their status.

**System responsibilities:**

- Registration of both voter and candidate
- Display of registered candidates with respective votes on homepage
- Display of registered candidates on voter dashboard if any
- Display of profile info and voting status on voter dashboard
- Display of profile info, voting status, and votes on candidate dashboard
- Maintaining record for each candidate and voter without making any duplicate record.

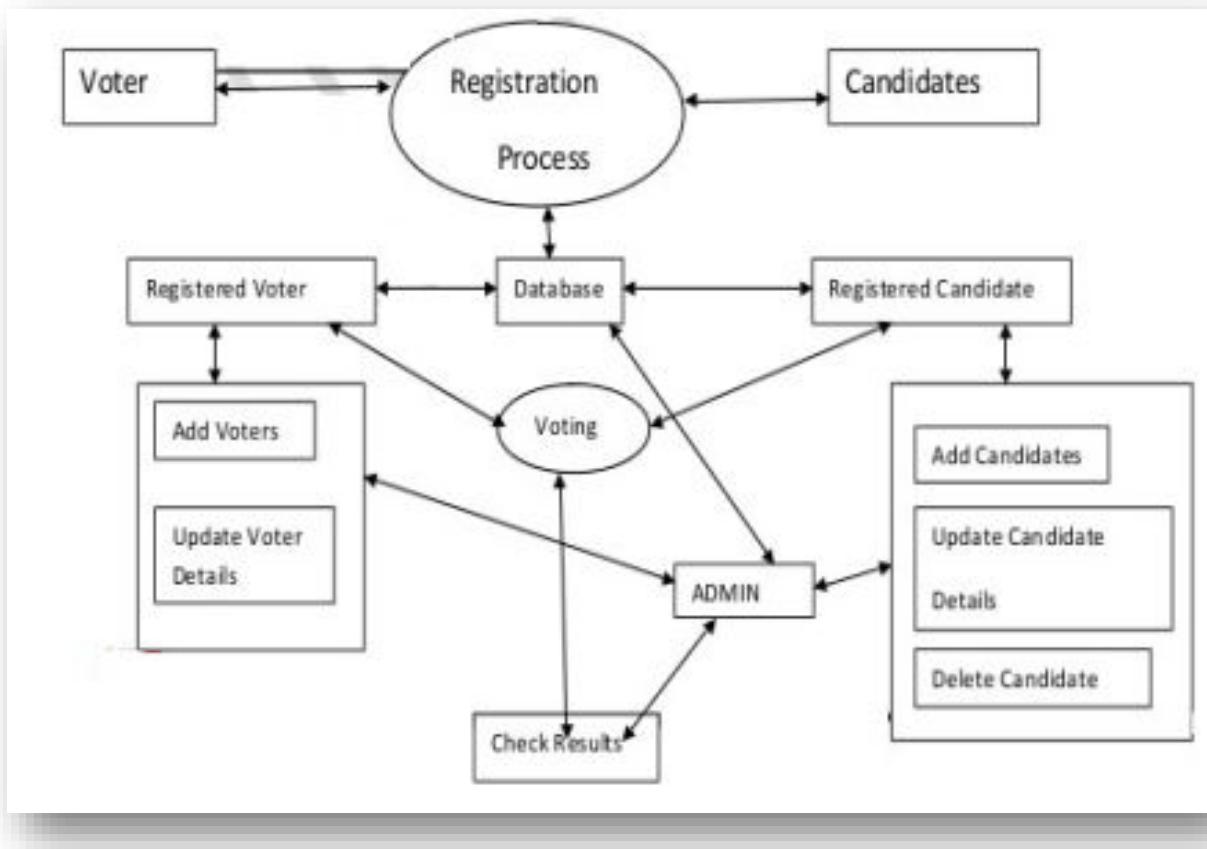
**3. Groups**

Groups/Candidates/Parties are those who will be given votes at the time of voting. And they can monitor their status by just doing login into system.

Following data from group/party side will be provided to the system at the time of registration:

- Name
- Mobile
- Address
- Status
- Votes
- Role (voter/group)
- Photo
- Password

### 4.3 ER DIAGRAM



### 4.4 SOFTWARE REQUIREMENTS

**1. HTML :** HTML (HyperText Markup Language) is the most basic building block of the Web. It defines the meaning and structure of web content. Other technologies besides HTML are generally used to describe a web page's appearance/presentation (CSS) or functionality/behavior (JavaScript). "Hypertext" refers to links that connect web pages to one another, either within a single website or between websites. Links are a fundamental aspect of the Web. By uploading content to the Internet and linking it to pages created by other people, you become an active participant in the World Wide Web.

**2.CSS :** Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language such as HTML.<sup>[1]</sup> CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript.<sup>[2]</sup>

CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts.<sup>[3]</sup> This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file which reduces complexity and repetition in the structural content as well as enabling the .css file to be cached to improve the page load speed between the pages that share the file and its formatting.

### **3. JAVASCRIPT**

JavaScript often abbreviated as JS, is a programming language that conforms to the ECMAScript specification.. JavaScript is high-level, often just-in-time compiled, and multi-paradigm. It has curly-bracket syntax, dynamic typing, prototype-based object-orientation, and first-class functions. Alongside HTML and CSS, JavaScript is one of the core technologies of the World Wide Web. JavaScript enables interactive web pages and is an essential part of web applications. The vast majority of websites use it for client-side page behavior, and all major web browsers have a dedicated JavaScript engine to execute it.

**4. PHP :** Hypertext Preprocessor is a server side scripting language designed for web development and also used as a general purpose programming language. It was originally created by Rasmus Lerdorf in 1994. The php reference is now produced by the php group. Php originally stood for personal home page. But now it stands for recursive initialism php hypertext preprocessor. Php code may be embedded into html code. It can be used in combination with various web template systems, web content management systems, and web frameworks. Php code is usually processed by a php interpreter implemented as a module in the web server or as a common gateway interface executable. The web server combines the results of interpreted and executed php code, which may be any type of data, including images, with the generated web page. Php code may also be executed with a command line interface and can be used to implement standalone graphical applications.

#### **4.5 HARDWARE REQUIREMENTS**

- **PROCESSOR : INTEL CORE i7**
- **RAM : 8 GB**
- **HARD DISK : 465 GB**

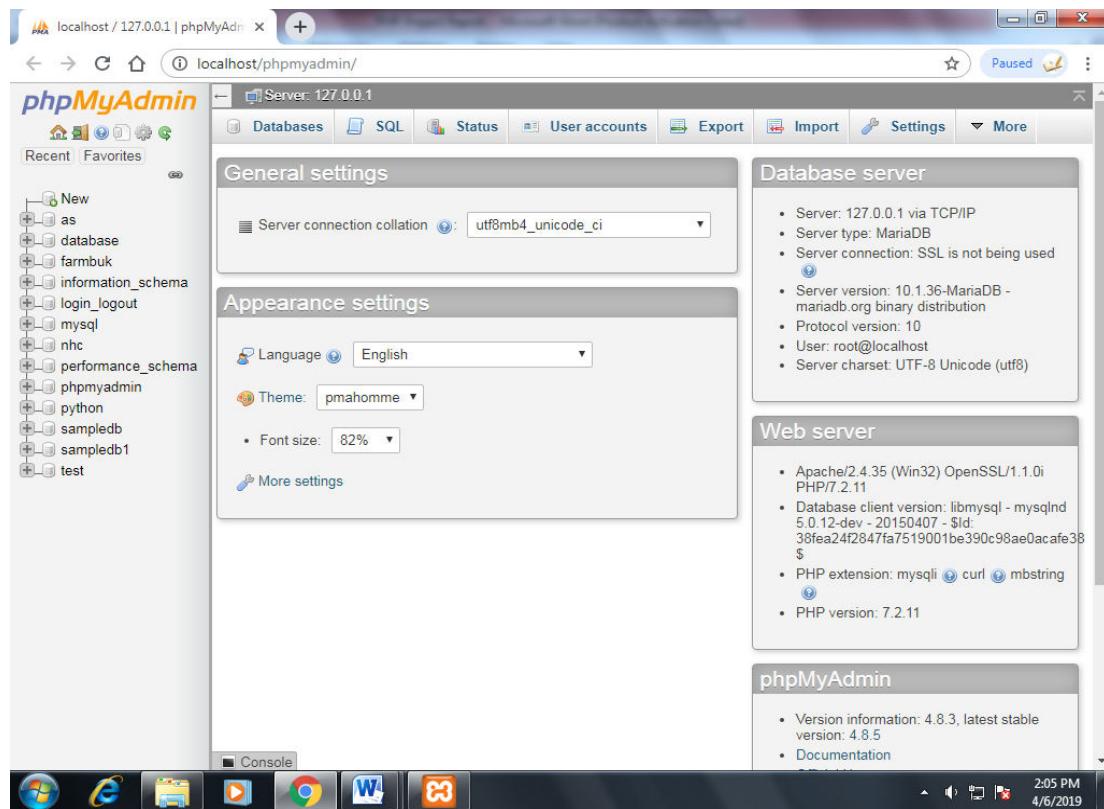
#### **4.5 XAMPP SERVER**

XAMPP is an open source free software developed by Apache friends. XAMPP software package contains Apache distributions for Apache server, MariaDB, PHP, and Perl. And it is basically a local host or a local server. This local server works on your own desktop or laptop computer. You can just install this software on your laptop or desktop and test the clients or your website before uploading it to the remote web server or computer. This XAMPP server software gives you suitable environment for testing MYSQL, PHP, Apache and Perl projects on the local computer. The full form of XAMPP is X stands for Cross-platform, (A)Apache server, (M) MariaDB, (P)PHP and (P)Perl. The Cross-platform usually means that it can run on any computer with any operating system.

## XAMPP SCREEN VIEW



**4.6 MYSQL DATABASE :** MySQL ("My S-Q-L", officially, but also called "My Sequel") is (as of July 2013) the world's second most widely used open-source relational database management system (RDBMS). It is named after co-founder Michael Widenius daughter, My. The SQL phrase stands for Structured Query Language. It is the world's most popular open source database. It is a Relational Database Management System (RDBMS) - data and its relationships are stored in the form of tables that can be accessed by the use of MySQL queries in almost any format that the user wants.



## 5. FIGURES

### User Interface

The screenshot shows the login page of the Online Voting System. The title bar reads "Online Voting System". The main content is titled "Login" and contains the following fields:

- Enter mobile
- Enter password
- Voter (a dropdown menu)
- Login button

Below the login form, a link says "New user? [Register here](#)".

## 6. CONCLUSION

This Online Voting system will manage the Voter's information by which voter can login and use his voting rights. The system will incorporate all features of Voting system. It provide the tools for maintaining voter's vote to every party and it count total no. of votes of every party. There is a DATABASE which is maintained by the ELECTION COMMISION OF INDIA in which all the names of voter with complete information is stored. In this user who is above 18 year's register his/her information on the database and when he/she want to vote he/she has to login by his id and password and can vote to any party only single time. Voting detail store in database and the result is displayed by calculation. By online voting system percentage of voting is increases. It decreases the cost and time of voting process. It is very easy to use and It is vary less time consuming. It is very easy to debug.

## REFERENCES

1. Al-Ameen, A.; Talab, S.A., "E-voting systems vulnerabilities," Information Science and Digital Content Technology (ICIDT), 2012 8th International Conference on , vol.1, no., pp.67,73, 26-28 June 2012 URL:  
<http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6269229&isnumber=6269212>
2. Cui Zhe; Dai Xiang, "A practical distributed electronic voting system," Electric Information and Control Engineering (ICEICE), 2011 International Conference on , vol., no., pp.1095,1099, 15-17 April 2011 doi: 10.1109/ICEICE.2011.5777548 URL:  
<http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5777548&isnumber=5776798>
3. Gritzalis, D. (2002). Secure Electronic voting. Seventh Computer Security Incident Response Team Workshop Syros, Greece.
4. Krejcie, R. & Morgan D. (1970). Determining Sample Size for Research Activities Educational and Psychological Measurement.
5. Melanie Volkamer (2010), —Electronic Voting in Germany, Data Protection in a Profiled World, DOI 10.1007/978-90-481-8865-9\_10, © Springer Science+Business Media B.V. 2010

# OBJECT DETECTION USING MACHINE LEARNING

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## ABSTRACT

Computer Vision is the branch of the science of computers and software systems which can recognize as well as understand images and scenes. Computer Vision is consisting of various aspects such as image recognition, object detection, image generation, image super-resolution and many more. Object detection is widely used for face detection, vehicle detection, pedestrian counting, web images, security systems and self-driving cars. Object detection is one of the is one of the most basic and central tasks in computer vision. Its task is to find all the interested object in the image and determine the category and location of object. Object detection is widely used and has strong practical value research prospects.

**Keywords:** Object recognition, Bounding box, Yolo algorithm, python, machine learning

## 1. INTRODUCTION

The project comes under the domain Machine Learning which is the part of Artificial Neural Network. Machine Learning concepts makes the system learn on its own from the experiences it gains, without the interference of the external factors. The YOLO (You Only Look Once) algorithm using Convolutional Neural Network is used for the detection purpose. It is a Deep Neural Network concept from Artificial Neural Network. Artificial Neural Network is inspired by the biological concept of Nervous System where the neurons are the nodes that form the network. Similarly, in Artificial Neural Network perceptions act like the nodes in the network. Artificial Neural Network has three layers that are, Input Layer, Hidden Layer and the output Layer. Deep Learning is the part of the Artificial Neural Network that has multiple Hidden Layer that can be used for the Feature Extraction and Classification purposes. Convolutional Neural Network (CNN) is the part of Deep Learning that is used in analysis of visual imagery. It has four different kinds of layers, they are, Convolutional Layer, Pooling Layer, Activation Layer and Fully Connected Layer. Convolution Layer uses filter and strides to obtain the Feature Maps

## 2. PURPOSE

The purpose of object detection is to detect all instances of objects from a known class, such as people, cars or faces in an image. Generally, only a small number of instances of the object are present in the image, but there is a very large number of possible locations and scales at which they can occur and that need to somehow be explored. Each detection of the image is reported with some form of pose information. This is as simple as the location of the object, a location and scale, or the extent of the object defined in terms of a bounding box. In some other situations, the pose information is more detailed and contains the parameters of a linear or non-linear transformation. For example, for face detection in a face detector may compute the locations of the eyes, nose and mouth, in addition to the bounding box of the face. An example of a bicycle detection in an image that specifies the locations of certain parts.

## 2.1 Scope

Object detection is breaking into a wide scope of enterprises, with use cases extending from individual security to efficiency in the working environment. Object detection is applied in numerous territories of image processing, including picture retrieval, security, observation, computerized vehicle systems and machine investigation. Critical difficulties remain in the field of object detection. The potential outcomes are inestimable with regards to future use cases for object detection.

## 2.2 Detecting Object

Object detection is an important task, yet challenging vision task. It is a critical part of many applications such as image search, image auto-annotation and scene understanding, object tracking. Moving object tracking of video image sequences was one of the most important subjects in computer vision. It had already been applied in many computer vision fields, such as smart video surveillance (Arun Hampapur 2005), artificial intelligence, military guidance, safety detection and robot navigation, medical and biological application. In recent years, a number of successful single-object tracking system appeared, but in the presence of several objects, object detection becomes difficult and when objects are fully or partially occluded, they are obscured from the human vision which further increases the problem of detection. Decreasing illumination and acquisition angle. The proposed MLP based object tracking system is made robust by an optimum selection of unique features and also by implementing the Adaboost strong classification method.

## 2.3 Template Matching

Template Matching is the technique of finding small parts of an image which match a template image. It slides the template from the top left to the bottom right of the image and compares for the best match with the template. The template dimension should be equal to the reference image or smaller than the reference image. It recognizes the segment with the highest correlation as the target. The positive things included the usage of priority queue improved quality of decision as to which bound-improved and when good matches exist inherent cost was dominant and it improved performance. But there were constraints like the absence of good matches that lead to queue cost and the arithmetic operation cost was higher. This has the advantage that it does not require much computational complexity as in the feature-based approach.

## 3. REQUIREMENT AND ANALYSIS

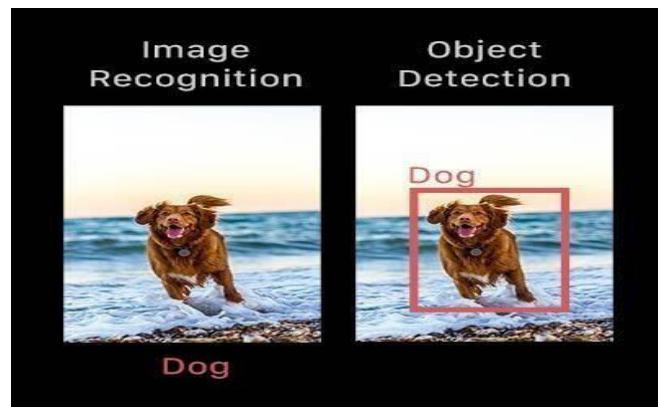
### 3.1 Problem Definition

Efficiency is an issue to be taken into account in any object detection system. As mentioned, a coarse-to-fine classifier is usually the first kind of classifier to consider when efficiency is a key requirement, while reducing the number of image patches where to perform the classification and efficiently detecting multiple classes have also been used. Efficiency does not imply real-time performance, and works are robust and efficient, but not fast enough for real-time problems. However, using specialized hardware (e.g., GPU) some methods can run in real-time (e.g., deep learning).

### 3.2 Functional Requirements

**1. Object Recognition:** Object recognition allows programs to pick out and identify objects from inputs like video and still camera images. The main purpose of object detection is to identify and locate one or more effective targets from still image or video data. It comprehensively includes a variety of important techniques, such as image processing,

pattern recognition, artificial intelligence and machine learning.



**Fig (1) Bounding Box:** A bounding box is an imaginary rectangle that serves as a point of reference for object detection and it will create a collision box for that object.

Bounding boxes are great for detecting indoor objects like tables, chairs, cupboards, furniture or electronic systems. It can help machines get an idea of a room and the kind of objects placed there with their position and dimension making it easier to identify such things quickly in a real-life scenario.

The bounding box is rectangular, which is determined by the x and y coordinates of the upper-left corner of the rectangle and the such coordinates of the lower-right corner.

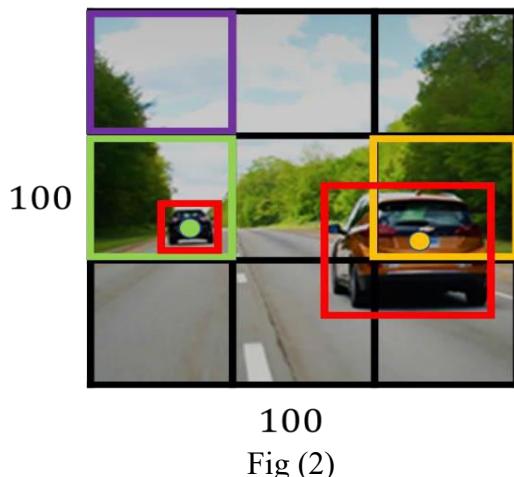


Fig (2)

**2. Visual Object Tracking:** It is the sequence of object locations in each frame of a video. Visual object tracking considers a problem of tracking of a single or multiple objects in the video. Task is to locate a certain object in all frames of a video, given only its location in the first frame. Object tracking is the process of locating moving objects over time in videos. One can simply ask, why can't we use object detection in each frame in the whole video and we can track the object. If the image has multiple objects, then we have no way of connecting the objects in the current frame to the previous frames.

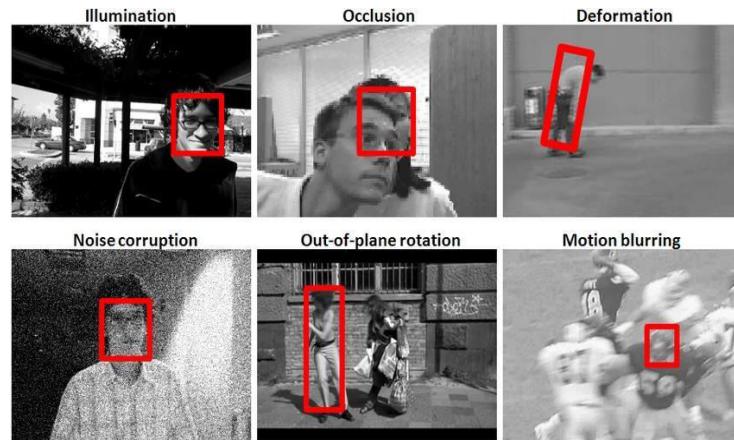


Fig (3)

**Real Time Image Processing:** Image Processing (IP) is a computer technology applied to images that helps us process, analyse and extract useful information from them. Colour Image Processing (Source) It is among rapidly growing technologies and has evolved widely over the years. Image processing is a method to perform some operations on an image, in order to get an enhanced image or to extract some useful information from it. It is a type of signal processing in which input is an image and output may be image or characteristics/features associated with that image

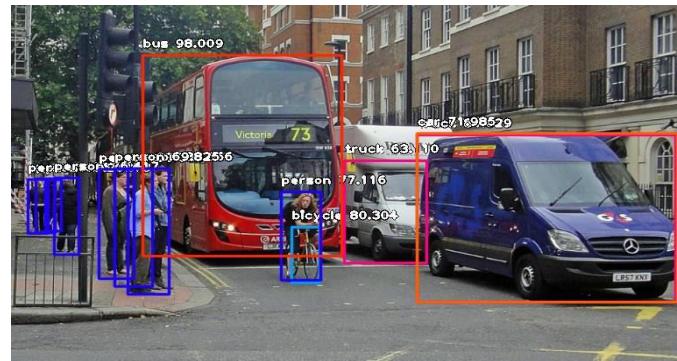


Fig (4)

### 3.3 Datasets

Understanding a model itself is less challenging than knowing where data scientists should implement it as its utilisation differs from dataset to dataset. Therefore, we must follow the end-to-end Machine Learning method on distinctive kinds of data and datasets. The more diverse datasets we use to construct our models, the further we understand the design. This is additionally a magnificent way to continue questioning yourself and investigate some exciting information being collected globally! One of the challenging subjects in computer vision, object detection, helps organisations understand and recognise real-time objects with the help of digital pictures as inputs. Here, we have posted the complete open-source datasets one can use for object detection projects.

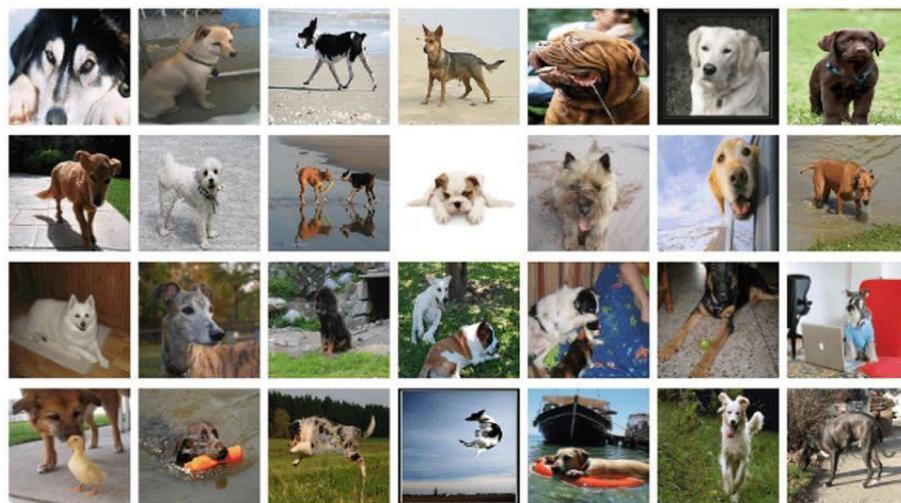


Fig (5)YOLO Algorithm

YOLO is an abbreviation for the term ‘You Only Look Once’. This is an algorithm that detects and recognizes various objects in a picture (in real-time). Object detection in YOLO is done as a regression problem and provides the class probabilities of the detected images. YOLO is an algorithm that uses neural networks to provide real-time object detection. This algorithm is popular because of its speed and accuracy. It has been used in various applications to detect traffic signals, people, parking meters, and animals.

#### Algorithm for Object Detection System

1. The input image is divided into  $S \times S$  grid.
2. For each cell it predicts  $B$  bounding boxes. Each bounding box contains five elements:  $(x, y, w, h)$  and a box confidence score.
3. YOLO detects one object per grid cell only regardless of the number of bounding boxes.
4. It predicts  $C$  conditional class probabilities.
5. If no objects exist then confidence score is zero. Else confidence score should be greater or equal to threshold value.
6. YOLO then draws bounding box around the detected objects and predicts the class to which the object belongs.

#### Algorithm works Using the following Three Techniques:

- **Residual blocks:** there are many grid cells of equal dimension. Every grid cell will detect objects that appear within them. For example, if an object center appears within a certain grid cell, then this cell will be responsible for detecting it.
- **Bounding box regression:** YOLO uses a single bounding box regression to predict the height, width, center, and class of objects. In the image above, represents the probability of an object appearing in the bounding box.
- **Intersection Over Union (IOU):** there are two bounding boxes, one in green and the other one in blue. The blue box is the predicted box while the green box is the real box. YOLO ensures that the two bounding boxes are equal.

### Combination of Three Technologies

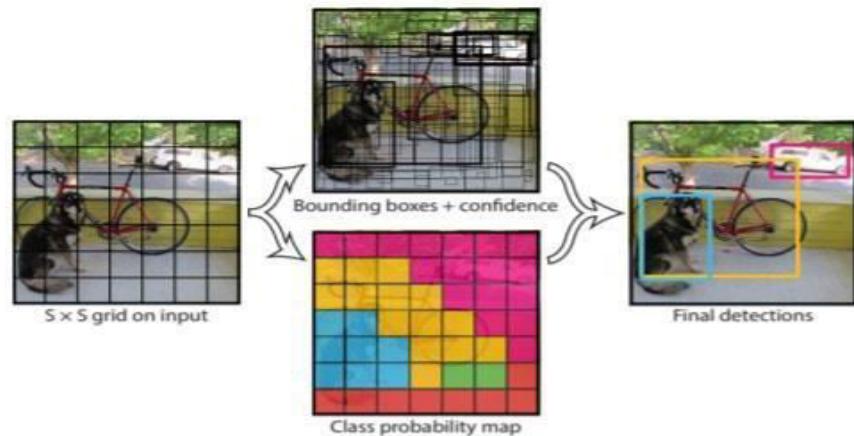


Fig (6)

### 5. CONCLUSION

The project is developed with objective of detecting real time objects in image, video and camera. Bounding Boxes are drawn around the detected objects along with the label indicating the class to which the object belongs. We have used CPU for the processing in the project. Future enhancements can be focused by implementing the project on the system having GPU for faster results and better accuracy.

### REFERENCES

1. Dr. Suwarna Gothane, "A Practice for Object Detection Using YOLO Algorithm", International Journal of Scientific Research in Computer Science, Engineering and Information Technology (IJSRCSEIT), ISSN: 2456-3307, Volume 7 Issue 2, pp. 268-272, March-April 2021. Available at Doi: <https://doi.org/10.32628/CSEIT217249> URL: <https://ijsrcseit.com/CSEIT217249>
2. Rodrigo Verschae, Javier Ruiz-del-Solar, "Object Detection: Current and Future Directions Perspective", Article in Frontiers in Robotics and AI, December 2015.
3. Baohua Qiang, Ruidong Chen, Mingliang Zhou, Yuanchao Pang, Yijie Zhai, Minghao
4. Yang, "Convolutional Neural Networks-Based Object Detection Algorithm by Jointing Semantic", Segmentation for Images, Sensors 2020.
5. <https://www.analyticsvidhya.com/blog/2018/12/practical-guide-object-detection-yolo-framework-python>

## Android Application of Food Wastage Management

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### ABSTRACT

This project used to manage wasted foods in a useful way. Every day the people are wasting lots of foods. So, we have to reduce that food wastage problem through mobile. If anyone has wasted foods, they click message send button and it will send the message of food availability, location information and their registered mobile number to nearest food donators. Then why will make a call first they will get the food. This system is android based application provides interaction between donor and receiver.

**Keywords:** Food donator, Collecting food, Food wastage problems

### 1. INTRODUCTION

Everyone enjoys the functions with a lot of food and other products and most of them left waste or unused. We all are waste food for various reasons. Typically, it's as a result of there has been an amendment of plans and it's out of our management, however, most of the time we tend to waste identical varieties of food for identical a pair of main reasons: We've got bought or read an excessive amount of, or we've got forgotten to use it on time. Regardless of the rationale why you throw out food, you got it and currently, its cost accounting you to throw it out. So, after you square measure throwing out food, or recording the food you've got wasted cash. A note the explanations for your scraps and see if their square measure tiny changes that you just will build to cut back this waste and prevent plenty of cash. In current system to reduce that food wastage problem through online. If anyone has wastage foods, they are entering their food quantity details and their address in that application and then the admin maintains the details of food donator. If anyone sees this information through this application they will go and collect the food and serve to poor people.

### 2. PURPOSE

In every Indian wedding, food is the most important part and the most wasted too! In India, statistics related to food wastage at weddings have been quite shocking, given the fact that it is the same country where countless number of people have to survive without the basic necessity of two meals a day. Following list by Venue Monk will give you an idea as to how much food is actually being wasted. Have a look: As the ranks of India's wealthy surge with rapid economic growth, many families are staging extravagant displays of food at their children's weddings to show off their newfound affluence. About one-fifth of the food served at weddings and social gatherings is discarded. The prodigious waste that follows has horrified many in a country where food prices are skyrocketing and tens of millions of young children are malnourished. Guests invited in weddings are mostly responsible for the food wastage because of different thoughts, mostly they have the fear that if they go second time to take the food they won't get it, for the first time they have seen the food they have never eaten before

or due to lack of education they do not realize that if they take extra food, it will get wasted. Around 100,000 weddings and social events are held in India every day. The country has enough food to feed its people but that poor cannot afford even two-square meals a day. Some 15-20 percent of food is wasted in marriages and various such social functions. In some cases, the waste is to the extent of 20-25 per cent when the number of dishes exceeds the number of guests invited to the marriage halls.

### 3. SURVEY OF TECHNOLOGY

**Some of the existing technologies are as follow:**

- No Food Waste
- FoodWise
- YWaste
- OLIO
- NoFoodWastet

### 4. REQUIREMENT AND ANALYSIS

#### 4.1 Problem Definition

If anyone have extra food because of any function or in their home it will be become waste because instantly there is no way to share with anyone if they are having lots of food. Even if they want to give that extra food to any orphanage or poor people, they don't have time or don't have an idea about that. So that we have create an application for sponsor that extra food to poor people or nearby needy people.

#### 4.2 Functional Requirement

- i. **Users Register:** First you have to register yourself to use the benefit of application. You have to enter your full name, e-mail and password. The user's details are maintained confidential by maintaining separate account for each user.
- ii. **Login:** You have to enter your e-mail and password to login and use the application in a smooth way.
- iii. **View Items:** This module helps us to view the food which are available in your location and can search other food which are available or not in their location.
- iv. **Add Items:** In this module if you are going to donate the food then, you have to tell the all the information related to that like the food you will give to other, your location from where you will provide food and the very important your contact information from which people can book the food.
- v. **Add Items to Cart:** In this module if the user finds many foods donor in their location and they can put them in their cart for booking and after sometimes it is available also then you can book the food otherwise it is of no use of putting item into cart if the food is finished in that place.

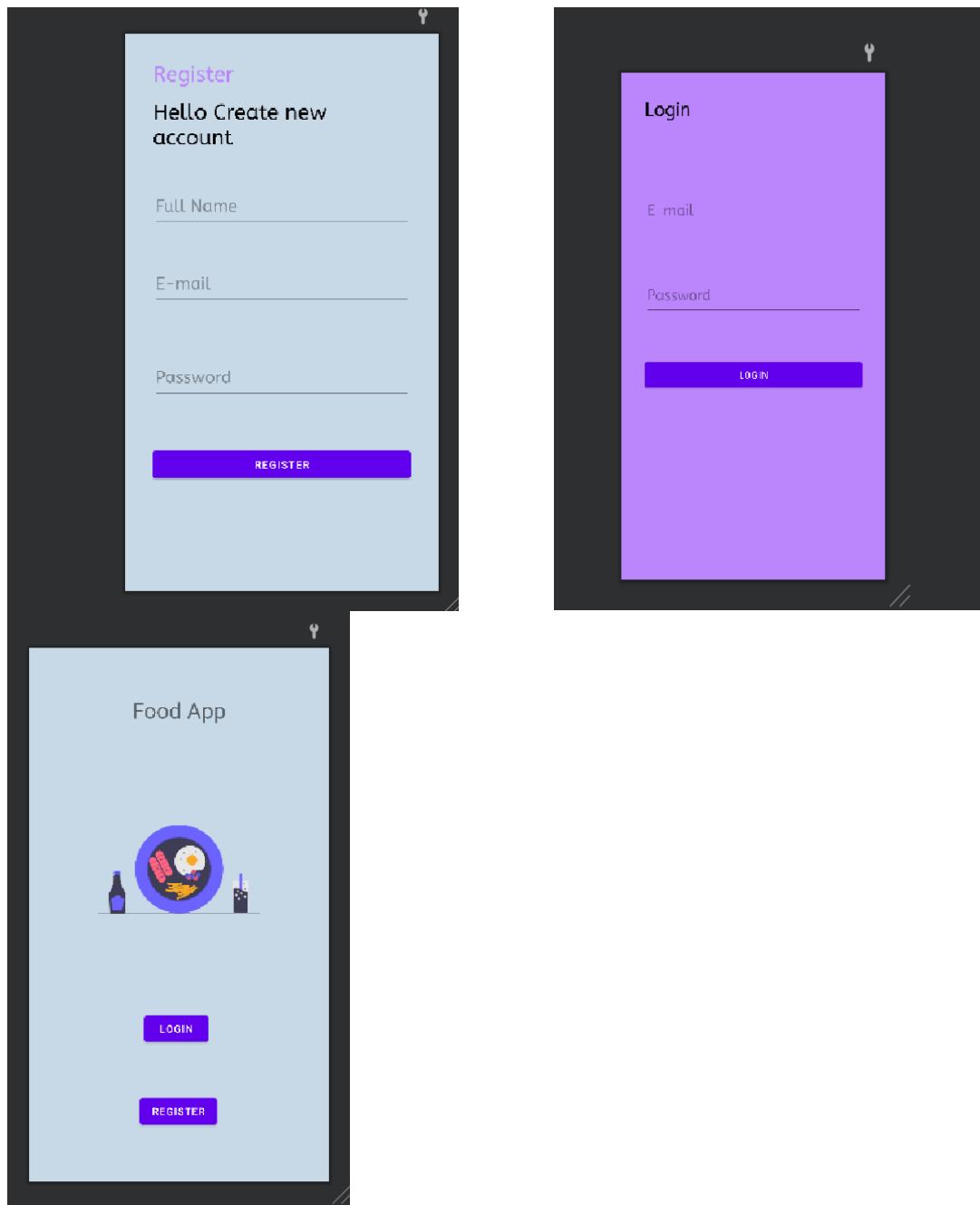
**vi. Remove an Item from Cart:** In this module the food item you have put in your cart have finished then there is no use of that so this will help you to remove that food item from your cart and you can put more items in your carts.

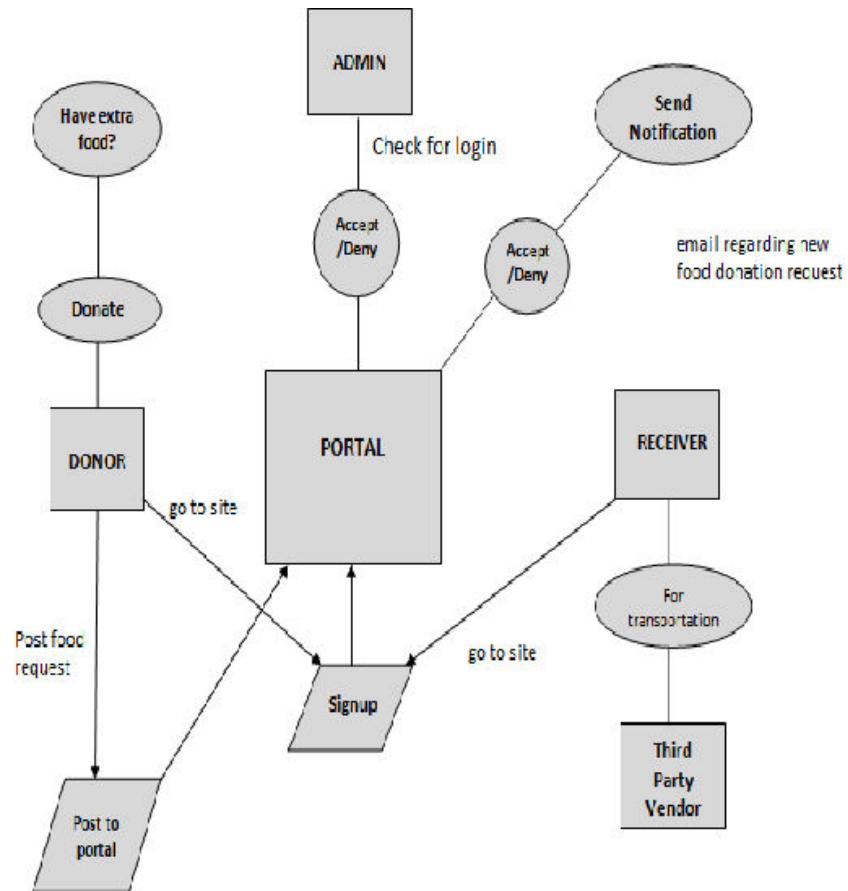
**vii. Log Out:** This helps you to get out of the application.

#### **4.3 Non-Functional Requirements**

- **Security:** The security requirements deal with the primary security. Only authorized users can access the system with username and password.
- **Performance:** Easy tracking of records and updating can be done.
- **User Friendly:** The User interface of it is very friendly and can be easily used by anyone.
- **Maintainability:** Backups for database are available.

#### **5. FIGURES**





## 6. CONCLUSION

The main objectives of the proposed application were to make reduction in food wastage as much as we can, and to feed those people who do not have enough food for one time to feed themselves. It's a big hassle hard for them to search food every day to feed themselves as well as their families, and also for donors to reach out to them. The software used to develop our android application is android studio and firebase for database. We hope in future this application will help to reduce the food wastage, and people starts to donate excess food to needy people or organizations.

## REFERENCES

- 1) <https://www.rescuingleftovercuisine.org/>
- 2) <https://www.tutorialspoint.com/index.htm>
- 3) <https://www.w3schools.com/>
- 4) <https://www.epa.gov/recycle/reducing-wasted-food-home>

# IOT based Smart Agriculture System Using Raspberry PI

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## ABSTRACT

The paper presents the simple and affordable smart agriculture system using an embedded microcontroller on Raspberry PI. The following system doesn't require any proposed server or PC and thus easing the farmers work on field. To demonstrate the effectiveness and feasibility of the system, devices such as temperature sensor, humidity sensor, soil sensor, water pump, buzzers, motion sensor and actuator like water pump, buzzers are used along with Raspberry PI.

**Keywords:** *Raspberry PI, Sensor, Actuator*

## 1. INTRODUCTION

IOT is a growing trend that is now seen everywhere in day to day life from office workspace to home appliances like Alexa and many others. IOT has many applications in smart agriculture, smart cities, smart homes health care, business sector, traffic monitoring etc. Here we are going to focus on agriculture as it plays a vital role in economy of any country and is backbone of every country. Smart agriculture system can be described as introduction of technology within the agricultural environment to provide the convenience, comfort, security and efficiency to its occupants. The reason to develop this system is to save time and manpower along with security and convenience.

## 2. OBJECTIVES

1. Simple idea to take agriculture one step ahead
2. Smart use of sensors and actuators for irrigation purpose
3. Helps to measure soil moisture and perform irrigation accordingly
4. Helps to reduce manual work of farmer
5. Helps to manage other work efficiently due to some of reduced work load
6. Auto mated scarecrows help to flee unwanted intruders

### 2.1 Purpose

The purpose of smart agriculture system is to let farmers change along with the growing technology in today's modern era. Applied to all type of farming from fruits to crops all these can be managed efficiently with help of IOT. With smart agriculture system, farmers can carry out all day-to-day tasks. They can get complete control as well as allowing them to increase their productivity.

- Give farmer some peace of mind by giving them a great relief
- To help farmers of getting alerted of any intruder
- To show ease of integration of farming and technology with help of IOT

### 2.2 Scope

The project aims at designing a prototype for controlling the mechanical appliances through the new modern technology trends which ensures the safe and productive farming

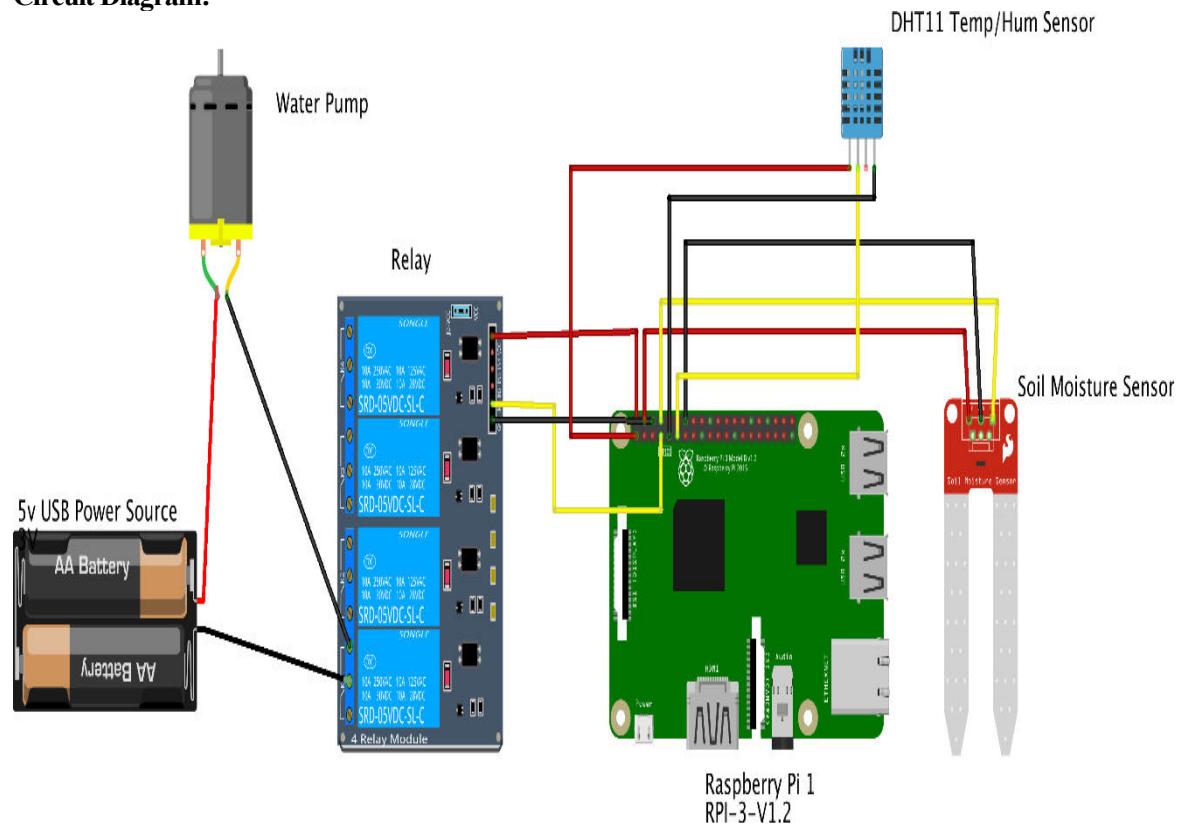
- The system can be used in small scale as well as large scale farming

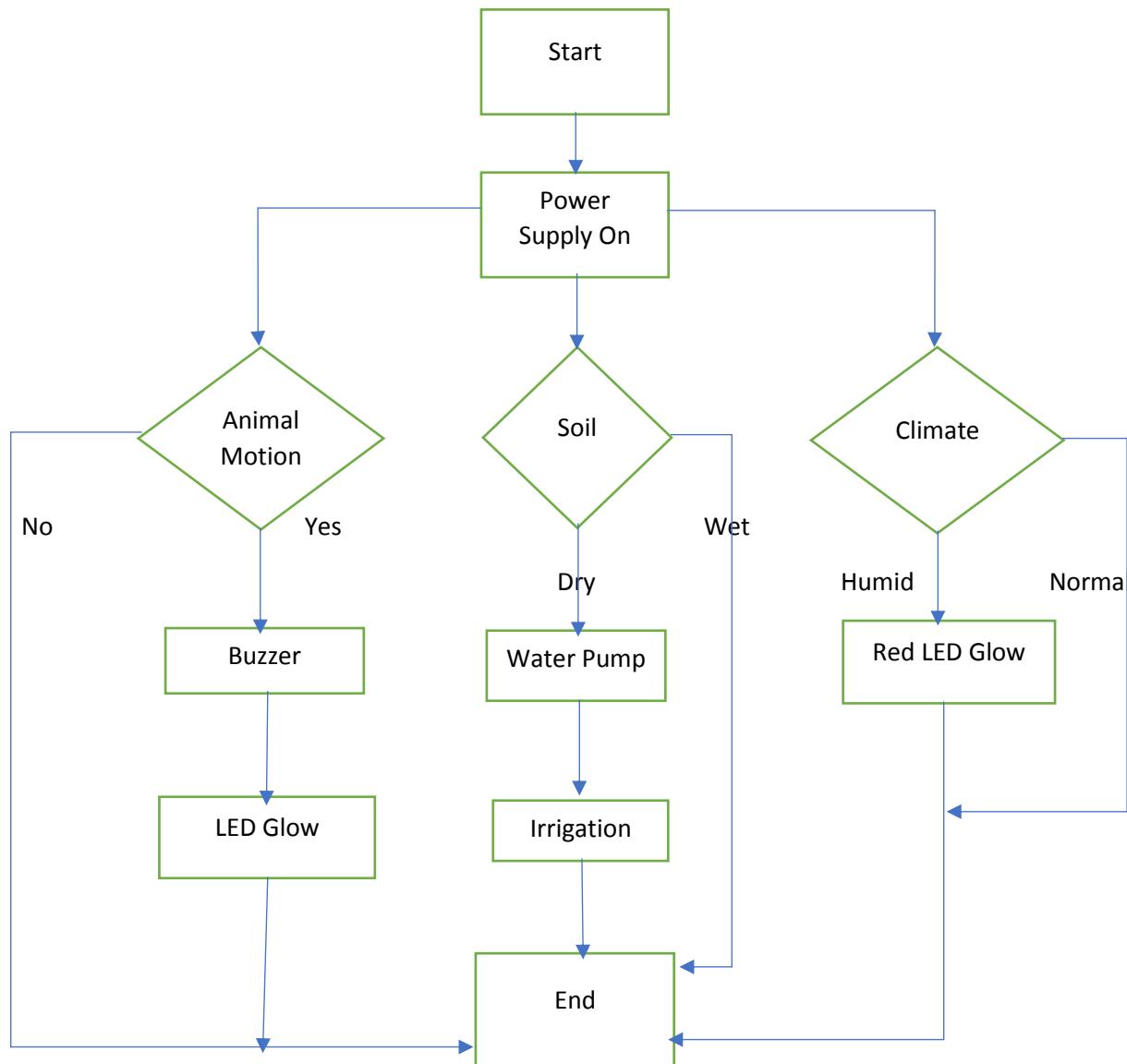
- The system can be used on all type of crop type, fruit, vegetable
- Reducing the maximum work of farmer with minimal work required

### 3.1 Problem Definition

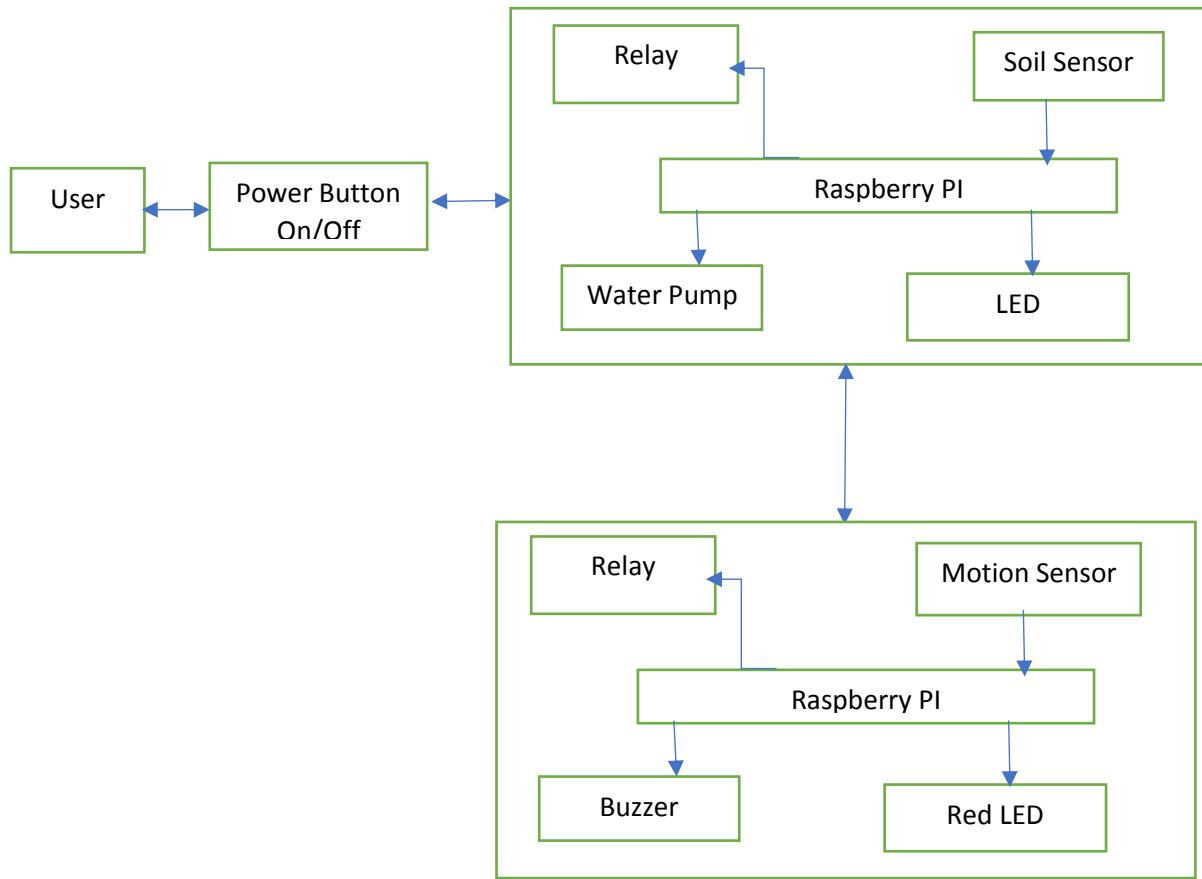
- ❖ Over irrigation can lead to damaging of crops.
- ❖ Over advance technology unable to handle by farmers efficiently.
- ❖ Wrong programming and connectivity can bring down whole project.
- ❖ Sensor or actuator failure can lead to trouble.
- ❖ High cost components can make project more expensive.
- ❖ Internet connectivity in rural areas are hard to come.

**Circuit Diagram:**



**Flowchart:**

### Block Diagram



### References

1. [IoT in Agriculture: 5 Technology Use Cases for Smart Farming \(and 4 Challenges to Consider\) \(easterpeak.com\)](https://easterpeak.com/iot-in-agriculture-5-technology-use-cases-for-smart-farming-and-4-challenges-to-consider/)
2. [IOT Based Smart Agriculture System | IEEE Conference Publication | IEEE Xplore](https://ieeexplore.ieee.org/abstract/document/8750402)
3. [PDF SMART AGRICULTURE USING IOT \(researchgate.net\)](https://www.researchgate.net/publication/321777170)

## Virtualizing the Trusted Platform Module

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### **ABSTRACT:**

The Trusted Platform Module (TPM) is an anti-distraction tool that provides the basis for confidence in a secure computer system and remote authentication frameworks. In this paper, we briefly discuss TPM structures, functionality and services. This highlights the important role that the computer ecosystem plays in architectural design decisions related to the basis of trust in the construction of a trusted platform. When developing and researching new trusted computer technologies, the right tools to investigate their behavior and evaluate their performance are very important. In this paper, we introduce Unix's efficient and portable TPM emulator. Our emulator empowers not only the use of flexible and inexpensive beds and simulations but, moreover, provides trusted programmers a powerful tool for diagnosing and eliminating error that can be used for educational purposes. Due to its versatility and interoperability, the TPM module works in a variety of platforms and is compatible with the most suitable software packages and workspaces.

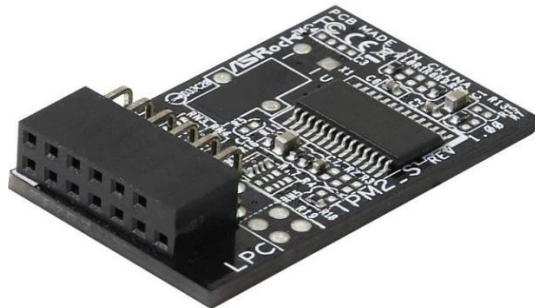
### **1. INTRODUCTION:**

In the real world, lumbering elephants are exposed by the aggression of speeding midgets that goes with it. In the computer world, to establish trust in a distributed environment nature also follows the same speculation. The concept of a trusted platform based on the existence of a reliable and trustworthy tool that provides evidence of the given system status. How this evidence is interpreted depends on the requesting business. Trusting in this context can be defined as the expectation of the state of the system is as it is considered secure. This description requires an honest person as well a trustworthy business called the Trusted Platform Module (TPM) to provide trust evidence about the status of the system. Therefore, TPM is a reporting agent (witness) and not the inspector or enforcer of security policies. It gives the origin of reliance on which the interviewer relied on to ensure the current state of the system. TPM enables remote witnessing by digitally signing cryptographic hashes of software components. Realization of TPM is necessary in order for its power to be available to all virtual machines operating in the platform. Each virtual machine that needs TPM functionality should be made to feel like it has access to its own private TPM, although there may be more virtual machines than TPM portable systems in the system (usually there is one TPM for each platform). It is therefore necessary to create a number of virtual TPM scenarios, each of which faithfully mimics the functions of TPM hardware.

### **WHAT IS TPM AND WHAT IS ITS USE?**

In basic terms, TPM (Trusted Platform Module) is a hardware chip that is responsible for protecting your PC from ransomware and any other form of hacking and malware. A cryptoprocessor that holds the keys to sensitive information, including your PC PIN or password, Windows Hello verification data, BitLocker encryption keys, important security keys, and more. As it is a hardware-based module,

a malware program cannot use it in standard software. Thus, the TPM chip becomes a high "root of trust", based on the hardware the OS can always rely on. To provide a similar example in the Android world, Google Pixel



phones come with a Titan M security chip that verifies firmware and checks for crashes before launching the device. In addition, the Titan M chip also protects your payment information, lock screen code, and other sensitive information. Samsung also added a unique Knox chip that enables hardware-based authentication of passwords, payments, confidential files, etc. All of this shows that hardware-based protection is the way to go, and Microsoft is well on its way to implementing the TPM Windows 11 requirement.

### WHY IS TPM ESSENTIAL FOR WINDOWS 11?

There is no denying that Windows computers are a favorite of hackers and complex attackers. Mainly because of how easy it is to install applications from the web or automatically create text on Windows that eventually infects the entire system. Remote killings are another popular way for hackers to exploit an compromised PC. Gone are the days when low-risk germs blocked the Task Manager, and you would have to use an antiseptic system to fix things again. According to Microsoft, 83% of business attacks experienced in the last two years were "firmware attacks." Firmware attacks mean exploiting the motherboard firmware itself, controlling hardware components, modifying startup process, and making code injection an easy task. The main purpose of the firmware attack is to steal sensitive information such as Windows Hello fingerprints/ facial data, bank details, Microsoft details, encryption keys, among other things. The threat of firmware attacks is very high. Therefore, TPM is required to protect your sensitive information in Windows 11. Attacks have become so complex that even TPM has failed to protect cryptographic keys against the latest Specter and Meltdown threats. It is therefore natural for Microsoft to create a secure, hardware-based authentication system so that users can stay on the safe side as we move forward.

### WHICH PROCESSORS HAVE BUILT-IN TPM SUPPORT?

The TPM module usually comes with a built-in CPU, but on custom PCs, you'll find a TPM header on the motherboard where you can attach a compatible TPM module. At least since 2014, almost all processors came with a TPM module on board. Intel began to integrate TPM into its chips with the formulation of Haswell (2013, 4th-Gen) without the K series, which acquired the Trusted Platform Module integrated with 6th-Gen (2015). So I can imagine that, Intel-powered Windows PCs after 2014 have support for TPM 1.2 or 2.0. You need to enable it in the BIOS / UEFI menu. To give you an example, I have an Intel i5 6th-gen processor, and TPM 2.0 is available on my PC. I should have just enabled it from the BIOS. And if you wonder, do AMD processors also support TPM? However,

onwards. Below, you can find steps on how to turn on TPM on your Windows 10 PC.

### **TPM KEYS.**

TCG keys can be classified as signing or final keys. Other key types defined by TCG are the keys to Platform, Identity, Binding, General and Legacy (Trusted Computing Group, 2007).

Signing keys can be classified as keys for general purpose and asymmetric in nature. Application data and messages can be signed by TPM using the signature keys. Signing keys can be moved between TPM devices based on existing limits. Storage keys are asymmetric keys and are mainly used to encrypt data with other keys and folding keys. Authentication ID (AIK) keys are used to sign TPM-related data as PCR register values. AIK signs keys that can be exported. Authorization Key (EK) is used to decrypt authorization information and private messages created by AIK. EK is not used for encryption or signing and cannot be exported. Merge keys (equal keys) help to encrypt data on a single platform and move it from one encoder to a different location. The die keys can be imported without TPM and used for signing and encrypting data. Verification keys are responsible for protecting TPM-related transit times and are similar in nature.

Authentication Key (EK) in TPM plays an important role in maintaining system security. TPM uses the secret key EK to generate some keys locked in a particular EK. EK should be protected and protected from exposure. A 160-bit AIK verification value is required to use AIK with TPM (Sparks, 2007). The parent key used to generate other keys must be pre-downloaded and approved by users before TPM can load all other keys. EK is different from TPM and is embedded within a stable static memory (Angela, Renu Mary, & Vinodh Ewards, 2013). Public EK is used to create AIK certificates during the data encryption process within TPM. EK private key pair is not touched when generating signatures. Many AIKs can be stored within TPM to ensure anonymity between various service providers who need proof of identity. AIK keys should be stored in a secure external storage area (excluding TPM) to enable them to persist. AIKs can be loaded into flexible memory in TPM when used.

TPM has a Storage Root key that you persist. Keys are permanently stored in TPM due to limited storage space. A brief description of the process involved in key generation, encryption, and decryption in TPM is described below (Osborn & Challener, 2013). The new RSA key is generated by TPM when the key creation request is initiated by the software. TPM adds value to the RSA key, adds authorization data and data is encrypted using the public root Root Key Storage and sends the encrypted “bridge” to the requested software. The request is sent for the key to be downloaded from the blob repository when requested by the software program. TPM uses the Storage Root Key to clear encryption and verify the amount of credentials and password before uploading the key to the TPM memory. This uploaded key is called a “parent” and can be used to create the next key that creates the most important categories.

### **KEY FEATURES OF TPM.**

- Turnkey solution: TPM incorporates integrated, secure and secure cryptographic key storage, encryption, and authentication information.
- Full TCG Compliance: According to TCG, applications based on reliable computer infrastructure demonstrate high security governance and risk management.

- Hardware security: TPM includes a random number hardware generator for high quality, effective protection, and a variety of interference detection and response circuits.
- High performance: TPM cryptographic accelerator can calculate RSA 2048-bit signature in 200 ms.
- Energy saving: TPM supports SIRQ Disruption and CLKRUN to allow the installation of energy-saving clocks on laptops.
- Software support: BIOS and hardware drivers are available for both Windows® and Linux® applications; third party system and application software are also available
- Two interactive locations: There is a 33 MHz LPC interface for PC integration and a 2 wireless interface for non-PC and embedded computer systems.

### **ADVANTAGES OF TPM:**

- The main and most important benefit of TPM is that it protects confidential information.
- Provides authentication features for both software and hardware.
- Security is enhanced with this asset because it does not depend on a software-based application.
- If you want to use TPM on mobile phones, you can encrypt all your phone's hard drive.
- Now, if you are thinking about how to share this data with your peers or server. Then you can use the time certificate.

### **DISADVANTAGES OF TPM:**

Contrary to the benefits of TPM, there are also many disadvantages as follows:

- The worst is the danger of the bug.
- TPM does not protect the system from cold boot attacks.
- TPM simply provides protection against system theft. In contrast, it does not consider online threats and system attacks or stored information.
- Its operating process is very long, as its tools use the key finders until the right key is activated.
- Other studies also show that, while restarting the system. TPM returns the encryption key while the system is connected to an external drive. At that point, the hacker can easily remove the disk write.
- In addition, it sometimes indicates a problem in connecting or using the appropriate software.

## 2. CONCLUSION

TPM supports hardware and software to protect confidential data. Provides a solution for various data encryption and security issues. However, you should also be aware that the Trusted Platform Module is not universally accepted. Some countries have restricted the use of TPM for example China. TPM adds hardware-based security benefits to Windows. When installed on hardware that integrates with TPM, Windows brings significantly improved security benefits. Microsoft and other industry partners continue to develop TPM-related international standards and acquire additional applications that they use to deliver tangible benefits to customers. Microsoft has included support for many TPM features in its Windows IoT Core version of Windows IoT Core. IoT devices may be used in virtually unprotected environments and connected to cloud services such as Azure IoT Hub management can use TPM in new ways to address their emerging security needs.

## REFERENCES

1. <https://docs.microsoft.com/en-us/windows/security/information-protection/tpm/how-windows-uses-the-tpm#conclusion>
2. [https://en.m.wikipedia.org/wiki/Trusted\\_Platform\\_Module](https://en.m.wikipedia.org/wiki/Trusted_Platform_Module)
3. <https://youtu.be/ZST2Cmt5Fm4>

## Smart Parking Allocation of Vehicles using Sensors and Wireless Technology

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**Abstract:**

The rapidly growing population of India is creating many problems in the cities, traffic congestion and vehicle parking is considered as one of the major issues faced by the people. As the numbers of vehicles on road are increasing, parking problems are becoming more prominent. People face problems of space availability, searching time and waiting time in public places like hospitals, railway stations, colleges, shopping malls etc. Finding a parking space especially during the office hours is difficult for drivers. The difficulty arises from not knowing the available space at that time and even if it is known, many places will have very limited parking space which causes serious traffic congestion.

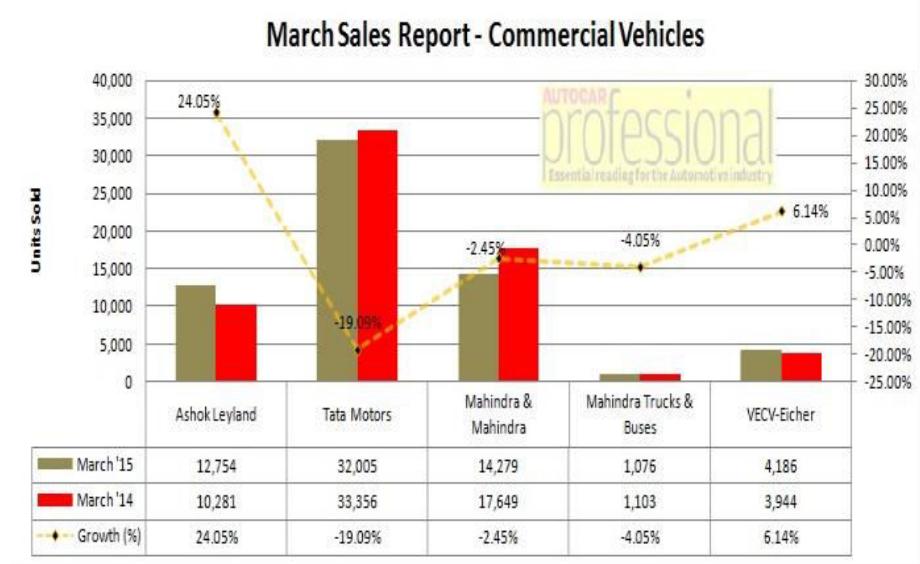
In this paper, we implement the prototype of smart parking system that allow drivers to find and reserve the vacant parking spaces. Smart parking system will use various sensors, wireless communication technology, to solve these issues. It will generate parking details such as available slot, direction, duration, billing details, and revenue etc. The drivers are allowed to access this dynamic parking system in their personal communication device or with the help of GSM, short messages can be sent in their cell phones. This system will save driver's time and it will also minimize the wastage of fuel. This will allow the parking authority to monitor the parking space and enhance the parking management.

**Keywords:** *Parking area, sensors, controller, password, entry and exit*

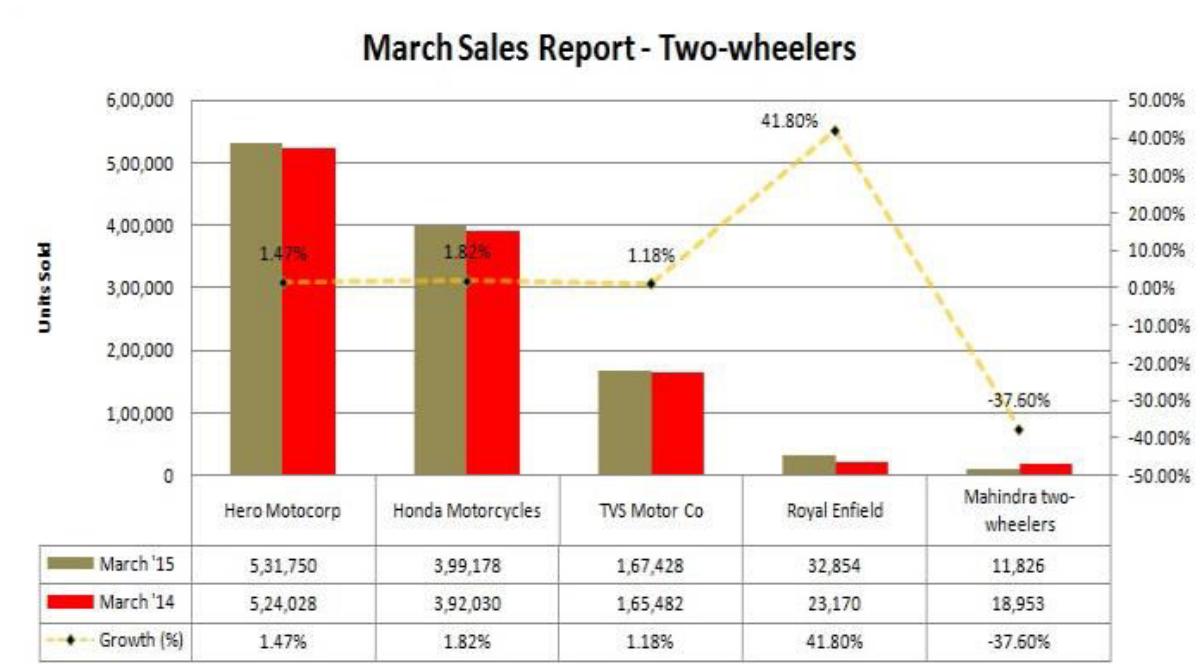
### 1. Introduction

The rapidly growing population of India is creating many problems in the cities, traffic congestion and vehicle parking is considered as one of the major issues faced by the people. As the numbers of vehicles on road are increasing, parking problems are becoming more prominent, Li et al (2004).

Graph given below shows the rate at which the vehicles have been purchased.



Source: <http://www.autocarpro.in/analysis-sales/india-sales-analysis-march-2015-automakers-fy2014-happy-note-8107>

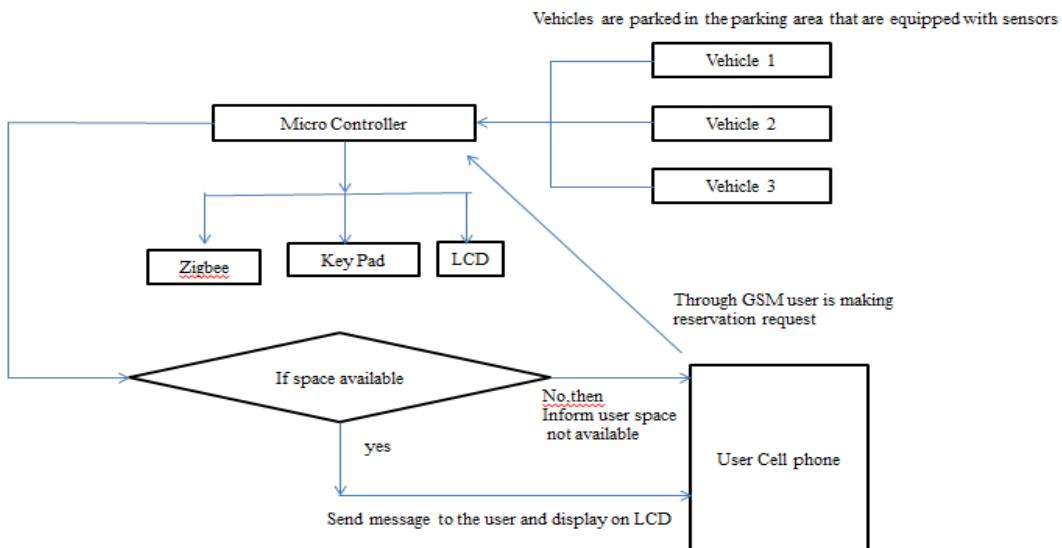


Source: <http://www.autocarpro.in/analysis-sales/india-sales-analysis-march-2015-automakers-fy2014-happy-note-8107#sthash.GEGY3Cfn.dpuf>

A smart parking allocation will provide a solution for these issues. The proposed works by providing entry and exit password securities, and the system will be very much cost effective Greunen et al (2003).

The diagram shows that many cars are parked in the parking lot, these are all sensed by the sensors and sensor in turn is connected to the microcontroller. Microcontroller is connected to the barrier gate. It is also connected to the zigbee, keypad and LCD. When the vehicle arrives at the entrance of the barrier gate, it will sense and sends the information to the LCD indicating the arrival of the vehicle which is waiting to park. User's mobile can get the details about the parking status through the GSM. GSM in turn will send the information to the CPU and the LCD. Anuja et al (2003)

## Diagram

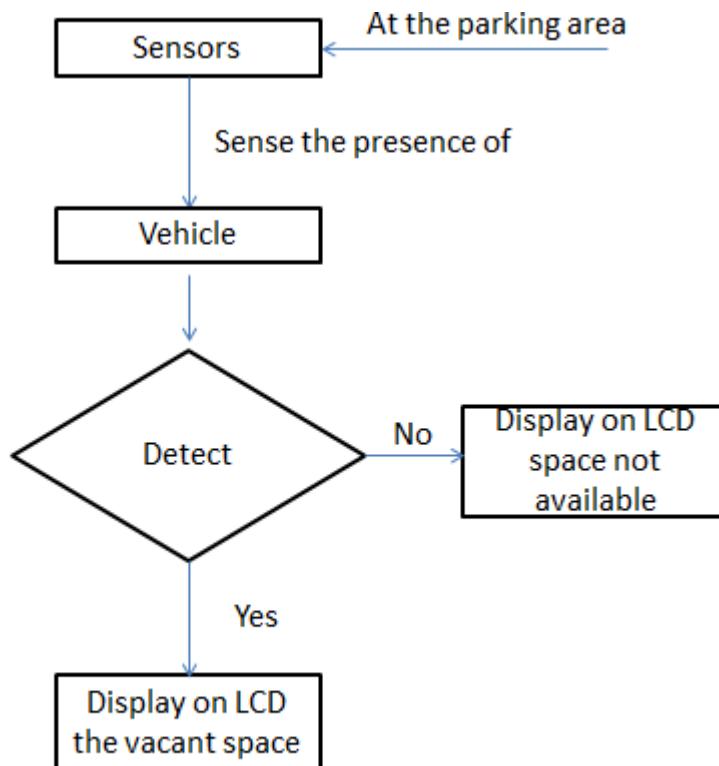


## 3. Proposed Model

### 3.1 Identification of available space in the Parking Area

The parking area is provided with sensors which will sense the presence of vehicles in the parking area continuously entire day. Any detection of vehicle in the parking area, will send signal to the microcontroller to which it is communicated. The microcontroller will in turn send the status information to the Zigbee node which is also interfaced with the microcontroller, which in turn is interfaced with a system at the entrance of the parking gate. Then the parking area status is updated in the database system. A display device is provided at the entrance of the parking gate which helps the users to identify whether the parking slot is available or not. Pola et al (2019).

## Diagram

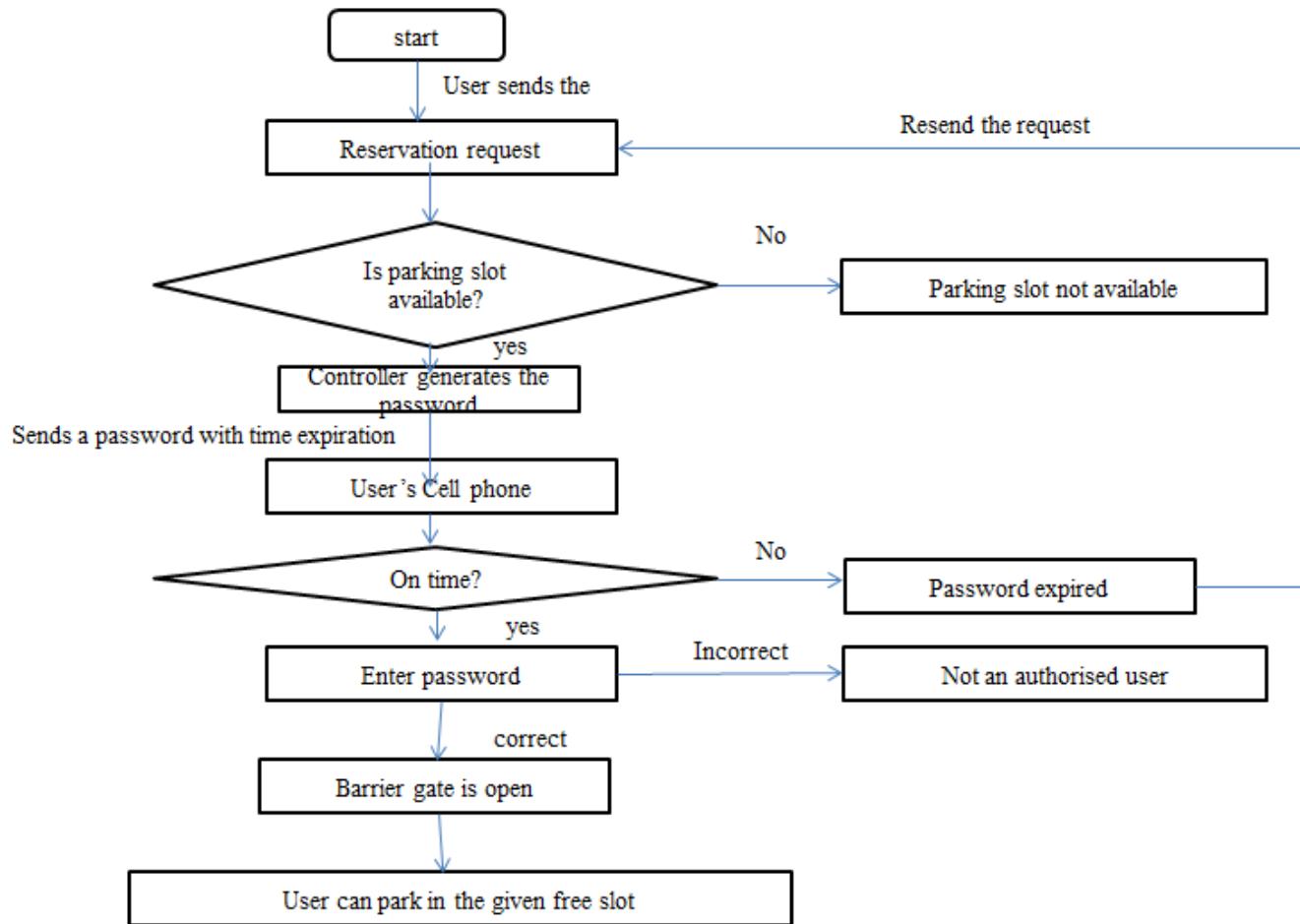


## 3.2 Reservation Module

When the user wants to reserve a parking area in advance, user will send an SMS through his cell phone. When the system receives the SMS from the user, it will start to check its database whether any vacancy is there. If the parking area is available from the database, then that particular area code will be given back along with the entry password to the user's cell phone with a one-time password of few seconds' validity Megha et al(2019).

After receiving the password, user will reach the parking gate and will prompt to enter the password within the stipulated time. If the password is correct and entered properly then the barrier gate will be open and the user is allowed to access the parking area and will park its vehicle at the respective slot allocated to him. At the parking slot there will be a sensor and camera that will provide security and monitor the vehicle. If the password is not entered in that time slot, then the password will be expired. And user will get an alert message stating the password is expired for the reservation slot.(Kayashita et al 2014).

## Diagram



### 3.3 Security Module

After the parking of the vehicle, the database is updated with the user's information such as the user name, vehicle number, parking slot code and user's mobile number. The sensor placed in that area will continuously monitor the presence of vehicle. If the vehicle is taken out from the parking slot then the sensor will send the signal to the controller and the controller will in turn send the signal to the system. The system will immediately generate an exit password and send it to the user's cell phone. User will type the exit password and is allowed to leave and barrier gate will be opened.

This security module also takes care If the vehicle is taken out from the parking slot by an unauthorized person, sensors placed at the parking slot will sense it and sends the exit password to the user's cell phone and user will come to know that some unauthorized person is trying to access his/her vehicle as well as the barrier gate will not open until correct exit password is entered which is actually known to the user.

Thus, vehicle theft can be protected at the parking areas such as malls, hospitals etc.(Vaibhav Et al , 2016)

#### 4. CONCLUSION

This system will work better in this smart generation with smart parking system, as it reduces the traffic and congestion and also provides higher level of security for the vehicles parked in the respective parking slot. Security is maintained by entry and exit password which the user is only allowed to enter. This system considered to be of less cost and highly secure.

#### 5. REFERENCES

- [1]“Zigbee Networking”. <http://www.freewimaxinfo.com/Zigbeenetworks.html>
- [2].ZIGBEE AND GSM BASED SECURE VEHICLE PARKING MANAGEMENT AND RESERVATION SYSTEM
- [3].A Reservation-based Smart Parking System Hongwei Wang
- [4].Q. Li and D. Rus, “Global Clock Synchronization in Sensor Networks,” in Proceedings of IEEE INFOCOM’04, 2004 .
- [5].J. V. Greunen and J. Rabaey, “Lightweight Time Synchronization for Sensor Networks,” in Proceeding ACM WSNA’03, 2003. [18] A. Sullivan and S. Sheffrin, Economics: Principles in action, Pearson Prentice Hall.
- [6]] Understanding Smart and Automated Parking Technology.Prof. Yatin Jog, Anuja Sajeev, Shreyas Vidwans and Chandradeep Mallick, 2003.
- [7] Megha H, Anusha, Review Paper on Smart Parking System, Department of Computer Science and Engineering Alva’s Institute of Engineering and Technology, Moodbidri, International Journal of Engineering Research & Technology (IJERT) ISSN: 2278-0181, 2019.
- [8] ElakyaR,Juhí Seth, Pola Ashritha, R Namith, Smart Parking System using IoT, International Journal of Engineering and Advanced Technology (IJEAT) ISSN: 2249 – 8958, Volume-9 Issue-1, October 2019.
- [9] I.V.VAIBHAV, A.Ramya, A Review onSmart Parking Management System Using Vehicle Authentication, IJAREEIE 2016
- [10] Chi-Hung Chuang, Luo-Wei Tsai, “Vehicle License plate recognition using super resolution technique”, 2014 11th IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS).
- [11] Mingkai Chen, “A Parking Guidance and Information System based on Wireless Sensor Network”, IEEE International Conference on Information and Automation Shenzhen, China June 2011.
- [12] Pahang, “Development of an Automatic Parallel Parking System for Nonholonomic Mobile Robot”, International Conference on Electrical, Control and Computer Engineering Pahang, Malaysia, June 21-22, 2011.
- [13] Huang Cai-mei, He Zhi-kun, “Design of Reverse Search Car System for Large Parking Lot Based on NFC Technology”, 2014 IEEE.
- [14] BhosaleSwapnali B, Kayastha Vijay S, “Feature extraction using surf algorithm for object recognition”, International Journal of Technical Research and Applications.
- [15] Face recognition using principal component analysis and neural networks, at: <http://www.researchgate.net/publication/23595016>, 2020

# An IoT Based Intelligent Braking System Using Arduino Uno

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## ABSTRACT

This paper presents an Intelligent braking system for forward collision avoidance. A large number of precious lives are lost due to road traffic accident every day. The common reason are driver's mistakes. This system consist of ultrasonic sensors namely ultrasonic wave emitter and ultrasonic wave receiver. The main target of the Intelligent braking system is that , cars should automatically brake when the sensors sense the obstacles. This is a technology for automobiles to sense an imminent forward collision with another vehicle or an obstacles and to brake the car accordingly . Thus this new system is designed to solve the problem where drivers may not be able to brake manually or exactly at the required time, but the vehicle can stop automatically by sensing the obstacles to avoid an accident.

**KEYWORDS:-** *Ultrasonic Sensor, Arduino Uno, Motor driver L298N , Jumping wires, C++*

## 1. INTRODUCTION

The recent development in the new generation of sensor rich, distributed autonomous control technology has had a profound effect on the design of modern automotive vehicles. The number of vehicles is increasing day-by-day and proportionally the number of accident are also increasing. These accidents are mostly caused by the delay of the driver to hit the brake. To prevent the accident caused by the delay. To prevent the accident caused by the delay, intelligent braking system can be used in the automobiles. This is a technology for automobiles to sense an imminent forward collision with another vehicle or an obstacles and to brake the car accordingly.

The reason to develop this project is to save more lives. In India approximately 1.2 lakh people died in road accident in which the major reason was brake failure. The ultrasonic sensor will sense the obstacles. So, Intelligent braking system is much useful for avoiding the accident.

## 2. OBJECTIVE

- To develop an Intelligent braking system for Automobiles.
- To avoid the collision of one vehicle with another vehicles.
- Saving the lives of many people by avoiding the road accident.
- The advantage offered by automatic braking system include a lower risk of collision and enhanced stopping power.

## PURPOSE

The purpose of this project is to design the automatic braking system in order to avoid the accident. To develop a safety vehicle braking system using ultrasonic sensor and to design a vehicle with less human attention to the driving. This project is necessary to be attached to every vehicle. Mainly it is used when drive the vehicle in night time. Mostly the accident occurred in the night time due to long travel the driver may get tired. So the driver may hit the front side vehicle. By using this project the vehicle is stopped by automatic braking system. So we can avoid the accident.

## SCOPE

The scope of this project is develop an a ultrasonic sensor to detect the obstacles and to avoid the accident. By using this project the vehicle is stopped by automatic braking system. So we can avoid the accident. Vehicle can automatically brake due to obstacles when the sensor sense the obstacles the focus of this object is designing and automatically braking system that can help us control the braking system of a vehicle automatically braking system. The auto braking system will stop the vehicle and avoid the accident.

The importance of this project can be figure out with the help of following statistics that

- Only 40% of Driver applied break in accidental situations.
- There were casualties about 2.6 millions last year due to front end vehicle collision
- Laboratory test results has proved the about of 47% of the collision impact can be reduced by automatically application of the break force.

## PROBLEM DEFINITION

When compared with the olden days life span of human life is reduced. Death rate due to accidents is drastically increased because vehicle usage is increasing day by day. Due to break failure so many accident are occurring so when we control the brake by automation we can reduce the effect of accident. To overcome this issue we have come up with the solution known as Intelligent Braking system. The first demonstration of forward collision avoidance was performed in 1995 by a team of scientist and engineers at huge research laboratories Malibu, California. Auto braking system or Intelligent braking system is a technology for automobiles to sense and avoid imminent collision with another vehicle, person or obstacles by braking without any driver input.

Auto braking system or Intelligent braking system are designed to develop a new system that can solve this problem where drivers sometimes may not brake manually but the vehicle can stop automatically due to obstacles. Intelligent braking system is given higher importance concerning safety issue and in particular active safety issue. It is advanced system specifically designed to either prevent possible collision or reduce speed of moving vehicle prior to collision with another.

## PRELIMINARY PRODUCT DESCRIPTION

**ARDUINO UNO** – The Arduino Uno is a micro-controller board that can integrate into a variety of electronic project it contain everything needed to support the microcontroller simply connect it to a computer with a micro USB cable to get started.



## ULTRASONIC SENSOR –

Ultrasonic Sensor are device that generates or sense ultrasound Energy. Ultrasonic sensor are divided into 3 parts Transmitter, Receiver, Transreceiver.



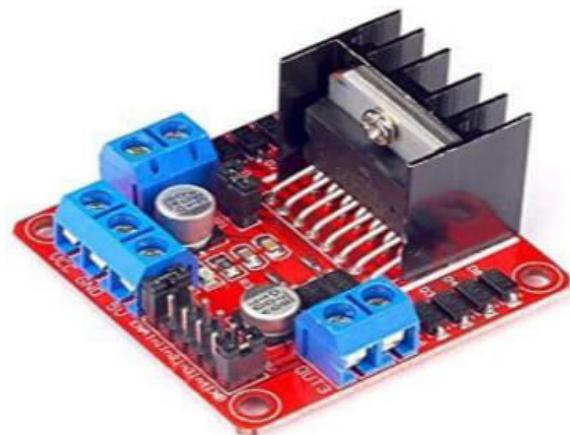
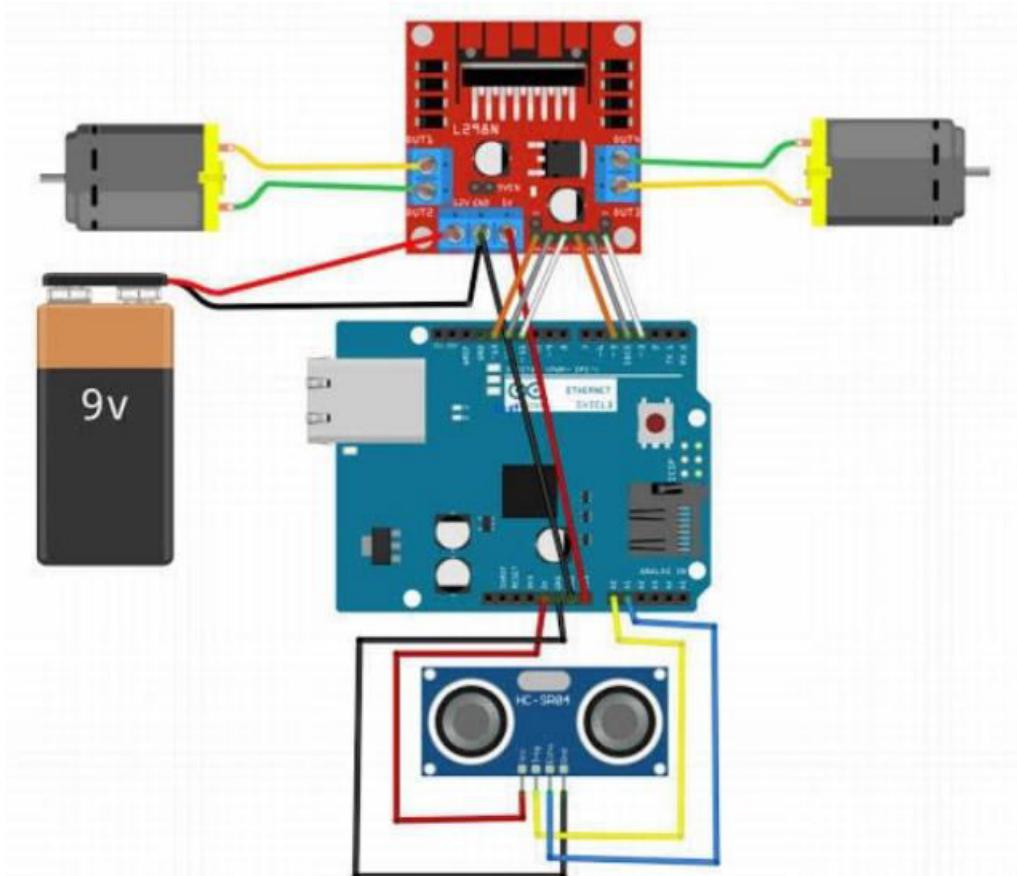
## DC MOTOR-

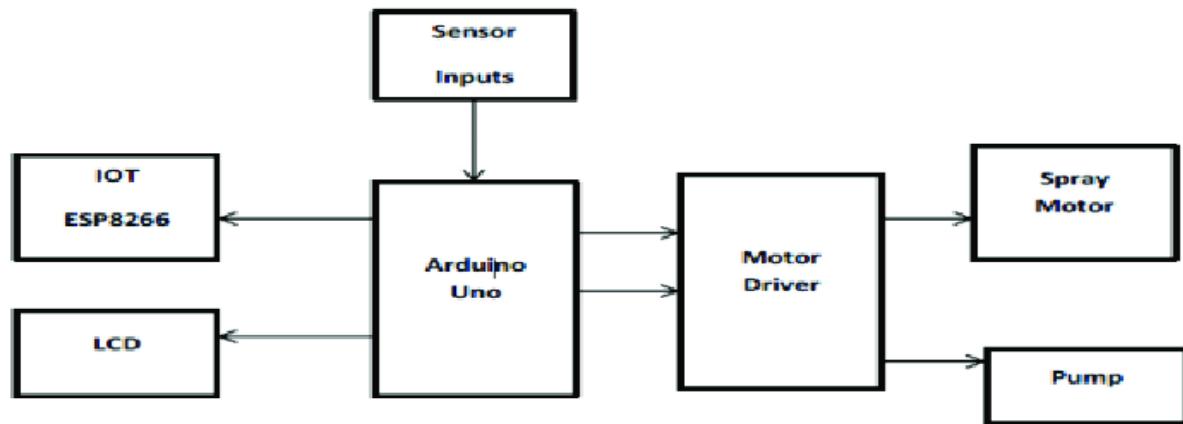
DC motor is any of a class of rotary electrical motor that convert direct current electrical energy into mechanical energy.



**MOTOR DRIVER-**

This L298N motor driver is high power motor driver module for driving dc and stepper motors. This module consist of stepper motor driver IC and A 78M05 Regulators.

**CIRCUIT DIAGRAM:**

**BLOCK DIAGRAM :****REFERENCE :**

1. <https://www.jstor.org/stable/44718374>
2. [http://www.ijareeie.com/upload/2019/december/9\\_IOT\\_FSE.PDF](http://www.ijareeie.com/upload/2019/december/9_IOT_FSE.PDF)
3. <http://www.yuvaengineers.com/ultrasonic-automatic-braking-system-for-forward-collision-avoidance-with-accelerator-pedal-disengagement-mechanism-nishad-vivek-kumbhojkar-chaitanya-avadhutchintan-kuber/>
4. <https://ijisrt.com/wp-content/uploads/2017/05/Automatic-Braking-System-Using-Ultrasonic-Sensor.pdf>

## Research on Methodologies for Information Extraction

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### Abstract

The new era of Information has brought a lot of new opportunities in the domain of automation. As lots of new data in various formats are being stored and then mined for useful insights one such format which has created the deepest impact in overall automation domain is mining textual data to get the important stuff out of it and then use that for various different analysis and decision making to various levels of automation. In this paper various methods for Information Extraction will be discussed and one of the methods in conclusion will be chosen for implementation.

**Keywords:** *Information Extraction, Data Mining, Automation, NLP, Information Processing.*

### 1. Introduction

Information Extraction is one of the main domains of research in Artificial Intelligence. Various methodologies that use syntactical properties of the text combined with Machine Learning has been implemented. Two types of such methodologies that have been discussed here are Rule Based Information Extraction Methods and Classification based Extraction Methods. Rule based Information Extraction methods basically use syntactical rules to extract useful Information whereas Classification based Extraction methods try to implement different techniques to classify important and non-important data from the given text.

### 2. Literature Review:

NLP based Information Extraction methods have been there since 19's and various works have been performed as well. There are several successful methodologies that is being used today in various text related applications such as AutoSlog (Riloff, 1993) that uses a sentence parser to parse the natural language, Crystal (Soderland, 1995), (LP)2 (Ciravegna, 2001), etc.

### 3. Objective:

Objective of doing this research paper was to find a method or a combination of them from, a whole library of methods, that can be implemented in our project which requires a method that is able to extract information from a given sentence using as less data as possible to get trained, with capabilities of domain specific learning and information extraction.

#### 4. Research Methodology:

This paper is a cumulative study of various methods based on NLP techniques to Extract Information which has been taken from various research papers published by the experts of the domain. Rigorous study has been performed to analyse the referenced papers and a comparative method is been used to identify the method that suits our project needs. This paper in a nutshell provides the comparative study of two types of NLP based Information Extraction Methods which are:

- 1) Rule Learning Based Extraction Method
- 2) Classification based extraction Method

There are other ways as well such as Sequential Based Extraction Method which are mostly for generalising purpose which does not fulfil the domain specific requirement of our project thus being the reason of not being one of the models to study.

##### **Rule Learning Based Extraction Method:**

For Rule Learning Based Extraction Method, we went through the paper of one of the domain experts which is Information Extraction: Methodologies and Applications (Tang et al) which provides in detail explanation with sub topics and generalized idea of the Rule Learning Based Extraction Method. Below we provide a brief understanding of the topic:

In general, the methods can be grouped into three categories: dictionary-based method, rule-based method, and wrapper induction.

Rule Based System the rule-based method uses several general rules instead of dictionary to extract information from text. Two main rule learning algorithms of these systems are: bottom-up method which learns rules from special cases to general ones, and top-down method which learns rules from general cases to special ones. There are proposed many algorithms, such as (LP)<sup>2</sup> (Ciravegna, 2001), iASA (Tang, 2005b)

It learns two types of rules that respectively identify the start boundary and the end boundary of the text to be extracted. The learning is performed from the examples in a user-defined corpus (training data set). Training is performed in two steps: initially a set of tagging rules is learned; then additional rules are induced to correct mistakes and imprecision in extraction.

##### **Dictionary based method**

Traditional information extraction systems first construct a pattern (template) dictionary, and then use the dictionary to extract needed information from the new untagged text. These extraction systems are called as dictionary-based systems (also called pattern-based systems) including: AutoSlog and autoslog-ts.

The key point in the systems is how to learn the dictionary of patterns that can be used to identify the relevant information from a text. Each AutoSlog concept node has a conceptual anchor that activates it and a linguistic pattern, which, together with a set of enabling conditions, guarantees its applicability. AutoSlog needs to parse the natural language sentence using a linguistic parser. The parser is used to generate syntax elements of a sentence (such as subject, verb, preposition phrase). Then the output syntax elements are matched against the linguistic pattern and fire the best matched pattern as the result pattern to construct a pattern dictionary.

### Classification Based Extraction Methods

The basic idea is to present information extraction problem as that of the classification.

Boundary detection using classification model

This system consists of two distinct phases: learning and extracting. In the learning phase our system uses a set of labelled documents to generate models which we can use for future predictions. The extraction phase takes the learned models and applies them to new unlabelled documents using the learned models to generate extractions. This model aims to generate the boundaries (start boundary and end boundary) for the special information.

For IE to text the whole document is converted into tokens such as words or sentences. Then two classifiers are learned one for start and one for the end boundary in positive and negative fashion where the start classifier marks positive the start boundaries and negative to the other whereas the second classifier does the vice-versa.

There have been many modifications to the above given methodology to overcome the problems related to it, which are discussed in the conclusion section below.

### 5. CONCLUSION

This section of the paper discusses the selection of the final model for the project based on the pros and cons as per the project requirements of the models.

Rule Learning Based Model:

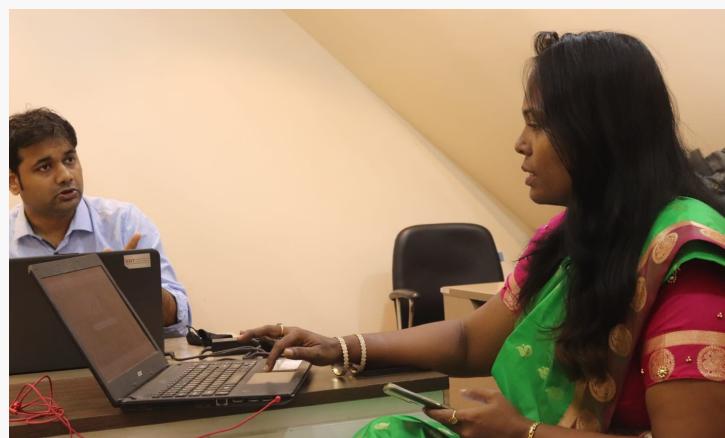
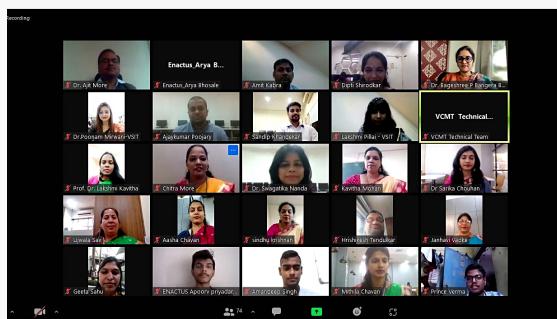
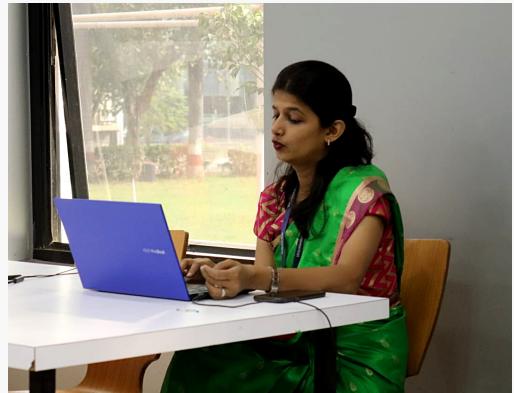
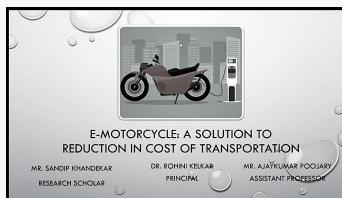
Rule Learning Based Model as described above is one of the models that can be used to Extract Information based on a dictionary that the model itself creates using a syntax parser. The benefit of such model is that if the extracted dictionary pattern is of good differentiators, then the model will work best, but if the dictionary gets affected then the whole model will have to suffer. Building a good syntax parser hence becomes much more important than Extracting Information.

Classification Based Extraction Method:

Classification Based Extraction Method as discussed above is an extraction method which classifies information with other data using boundary classification. This model works well when the dataset is small but if data becomes large then the probability of the identified boundary to be right becomes very low, which shows that to make this model work we will require a model with high precision otherwise we would be stuck with just false positives. There are solutions to this problem such as, use of two-level boundary and others. As classification-based methods were aiming towards a more general domain of natural language processing, which basically becomes much bigger than our project domain. On the other hand, Rule Learning Based Extraction is what seems feasible seeing the projects needs of being domain specific and low data training capacity. So, we decided to go with the Rule Learning based Extraction keeping our window open definitely for bootstrapping in future as well.

**References:**

1. Tang-et-al - Information Extraction: Methodologies and Applications
2. AutoSlog (Riloff, 1993)



# V-CMT DEC 2021





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**V-CMT DEC 2021**

**ISBN:978-93-5578-200-7**